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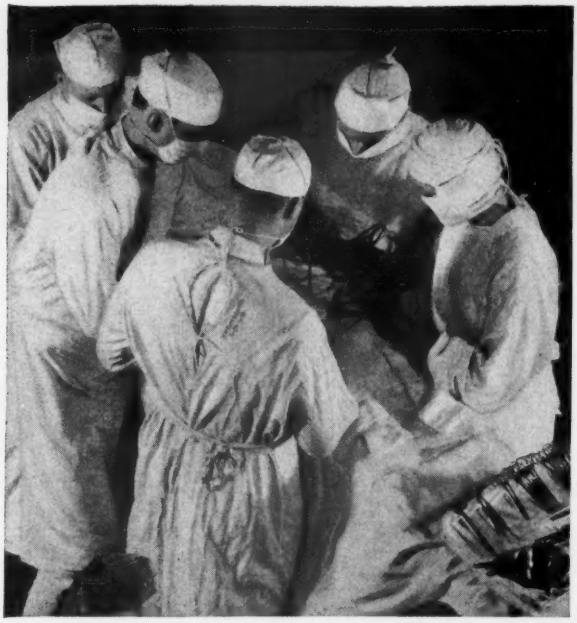

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SOME FALLACIES IN REGARD TO ECTOPIC PREGNANCY

JENNINGS C. LITZENBERG, M. D.
Minneapolis

TRADITION, that age-old force which transmits knowledge, opinions and customs from generation to generation, exercises an influence so strong that it is often difficult to distinguish between fact and fallacy.

Tradition has no place in science, yet in every branch of medicine many fallacies supported only by tradition are handed on, even by accepted textbooks. It is the purpose of this paper to discuss a few of the fallacies in regard to extrauterine pregnancy, all of them proved wrong by logic and investigation.

AN IMPLANTATION FALLACY

Implantation, according to tradition, is said always to take place in the tube wall. Werth, in 1904, declared the implantation of the ovum did not always occur in the tube wall but might take place in a tubal fold and have no direct connection with the tube wall itself. He called this columnar implantation, as distinguished from intercolumnar, i. e. when the nidation is between folds in the tube wall. (Fig. 1.) Many investigators deny the possibility of columnar implantation in a tubal fold. I was always skeptical of this type until Somerfield, working in our laboratory, demonstrated this phenomenon. (Fig. 2.) In his specimen it is definitely shown that there is no direct connection of the pregnancy with the tube wall, except at the point where the tube fold originates. Somerfield thus proved columnar implantation. Figure 1 is a splendid illustration of intercolumnar implantation in the tube wall and of unruptured early tubal pregnancy.

Read before the Seventh Annual Assembly of The Southeastern Surgical Congress, in New Orleans, March 9, 10 and 11, 1936.

An Etiologic Fallacy

Since fecundation normally occurs in the ampulla of the fallopian tube, every conception is primarily extra-uterine. Hence ectopic implantation in the tube is to be expected whenever any condition interferes with the progress of the fertilized ovum toward the uterus.

Chronic salpingitis and other sequelae of pelvic inflammation are usually accorded the most prominent role in the etiology of extra-uterine pregnancy, because endosalpingitis interferes with the tubal

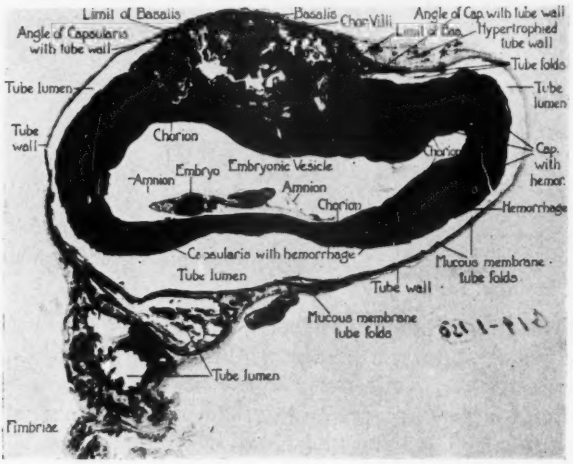

Fig. 1. Longitudinal microscopic section of unruptured tubal pregnancy, showing relations of ovum to tube.

cilia, causes adhesions of the tube folds, and forms pockets and strictures, while perisalpingitis hinders peristalsis, distorts the tube with bends, kinks and narrows the lumen of the tube. No doubt these conditions may cause ectopic gestation, but to ascribe to them the chief role is to exaggerate, when we view the accumulating proof that a great majority of cases show no evidence of previous inflammation, either macroscopic or microscopic. Less than 10 per cent of my specimens, including tubes sent by others for pathologic examination, showed positive evidence of salpingitis.

Oastler, in 72 cases, found no evidence of an inflammatory condition of the fallopian tubes. Brown, in a large series, found only 10 per cent due to salpingitis. "The old idea of preceding disease of the tubes is but rarely borne out, as a great many ectopic pregnancy tubes are found remarkably healthy." (Johnston, Schoenhoff.) Lavall, in an analysis of 410 cases, averred that: "A pre-

vious history of severe pelvic inflammatory disease was seldom reported." Van Etten, in a complete pathologic study of 77 cases, found definite evidence of previous tubal inflammation in only 10.4 per cent. Van Etten said that the greatest error is in diagnosing salpingitis whenever there is round cell infiltration in the neighborhood of the implanted ovum. Bumm many years ago pointed out that round cell infiltration is always present, even in intrauterine implantation, and is simply the normal reaction to the irritation of the burrowing ovum, whether in the tube or in the endometrium.

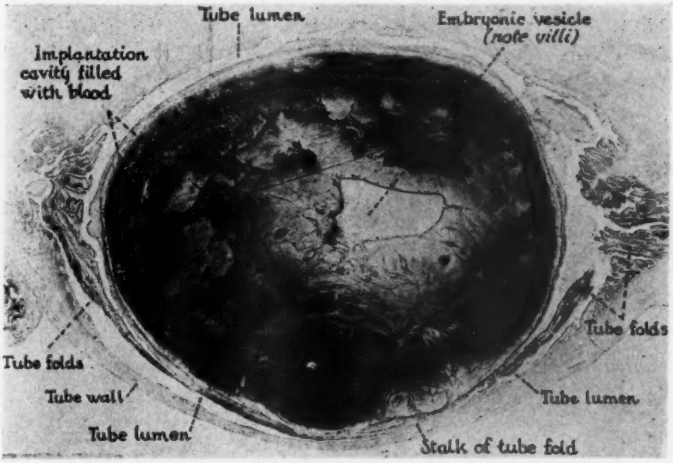

Fig. 2. Illustrates implantation of ovum in tube fold: "Intercolumnar" Implantation. The ovum is attached to the tube wall only by the fold stalk. Compare with Figure 9 which shows the same ovum apparently free in the tube lumen.

The more careful the microscopic examination, the lower is the percentage of cases attributable to pelvic inflammatory disease.

Perhaps we have not given enough thought to causes within the ovum itself. The first evidence in the literature of a real understanding of the cause and phenomena of extrauterine pregnancy was by Pierre Donis in 1718 and quoted by Schumann: "If the egg be too big, or if the diameter of the tuba fallopina is too small, the egg stops and can get no farther, but shoots forth and takes root there, and having the same communication with the blood vessels of the tuba that it would have with those of the womb, had it fallen into it, is nourished and grows big to such a degree that the membrane of the tuba, being capable of no such dilatation as that of the uterus, breaks at last, and the fetus falls into the cavity of the abdomen, where it sometimes lies dead for many years and at other

times occasions the death of the mother by breaking open its prison." What profound reasoning, 175 years before the first operation for early tubal pregnancy! At that time the only conception of extra-uterine gestation was limited to abdominal pregnancy. Donis' thesis antedated by more than a century our present knowledge of the implantation of the ovum.

We are still compelled to speculate on how fast the ovum grows and when it becomes too large to pass on to the uterus. We do not know the rapidity of cell division of the fertilized human ovum, by

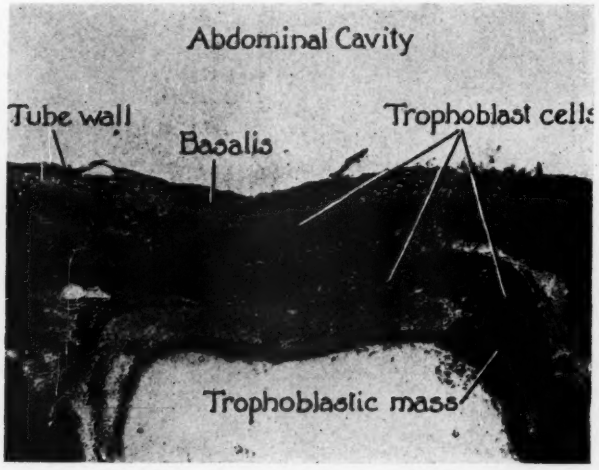

Fig. 3. Illustrates fetal trophoblastic cells infiltrated into surrounding tissues (often mistaken for decidua cells).

which it becomes too large for the tube lumen, nor the amount of membrana granulosa, which may adhere to the ovum, rendering its passage difficult. Neither do we know how soon it reaches the trophoblastic stage, when it is bound to exercise its power of erosion and implant itself wherever it may be. Yet the conclusion is inescapable that intrinsic conditions of the ovum, as well as extrinsic influences, for example external migration from the opposite ovary, may delay the journey of the ovum to the uterus so that it reaches the trophoblastic stage in the tube.

Pathologic Fallacies

Because the ovum digests its way into the tube just as it does into the endometrium, some authors have thought that tubal pregnancy duplicates all the phenomena found in uterine pregnancy. This is far from true. There is indeed the analog of every structure found

in uterine conception, but never the identical thing itself (Fig. 1). The physiologic processes are the same, but the results are inevitably pathologic, because the ovum is implanted in an organ wholly unfitted anatomically and histologically for its reception or development.

There is no true decidua in the tube although many authors say there is. The decidua in the uterus, because of its highly specialized elements and important function, might well be called an organ. In the tube we find no such specialization. At the place of implantation there is an ovum bed but no decidua basalis and very few decidual cells. Even in serial sections I found such cells in but few slides and then only after prolonged search. Those who assert that

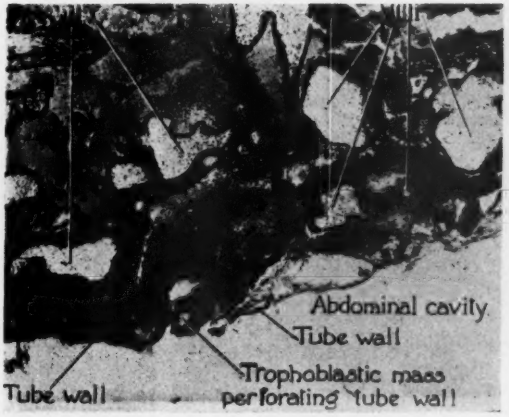

Fig. 4. Illustrates villus and its trophoblastic mass perforating the tube wall into the abdominal cavity.

decidual cells are found in abundance undoubtedly mistake trophoblastic cells for decidual cells, an error easy to make, especially when the trophoblastic cells are isolated or are found in groups showing no direct connection with trophoblastic masses. Their fetal origin can be demonstrated easily, however, where a deeply stained undoubted trophoblastic mass is adjacent to more or less isolated and more faintly stained, but morphologically identical cells (Fig. 3). If there were decidua in the tube the clinical course would be considerably altered.

Because there is no protecting decidua at the site of implantation, the ovum quickly erodes its way through the mucous membrane, immediately attacking the muscular layers of the tube and weakening the wall by literally riddling the muscles (Fig. 1). In

the earliest stages of implantation the ovum is actually intramuscular.

The uterine decidua protects the large vessels of the muscle wall from erosion. The vessels eroded in the decidua are very small and furnish a normal, balanced blood supply to the intervillous spaces. In the pregnant tube, however, large vessels are opened, producing hemorrhage not only into the muscular wall but also distending the intervillous spaces. This hemorrhage puts the ovum capsule under great pressure, often beyond its ability to withstand. The weakened capsule may burst, either externally into the abdominal cavity, or internally into the lumen of the tube, so-called tubal abortion. (Figs. 5 and 6.)

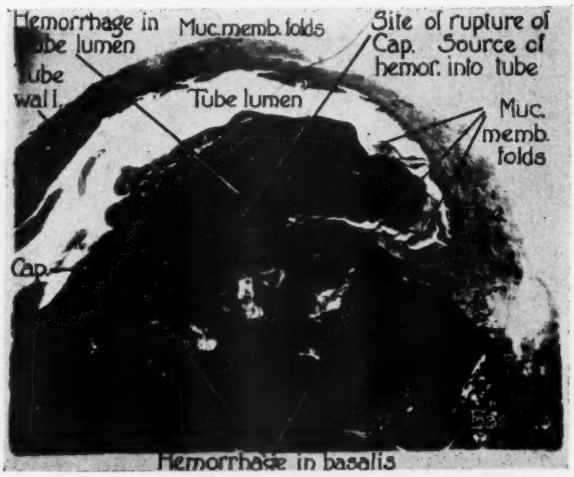

Fig. 5. Illustrates internal rupture of the inner ovum capsule into tube lumen.

Figure 7 shows a large dilated vessel of the pregnant tube being attacked by villi. Figure 8 is a remarkable photomicrograph, showing a villus in the very act of eating its way through the vessel wall. The trophoblastic mass at the tip of the villus is seen partly outside the vessel wall and partly within the vessel lumen, like a rivet. This large hemorrhage has great significance. Clarence Webster, forty years ago in his classic work, "Extrauterine Pregnancy," said that in all the pregnant tubes he had examined he had never seen an inner capsule without hemorrhage infiltrating it. I have examined in serial section many ectopic tubes at various ages and have never seen one without intracapsular hemorrhage (Figs. 1, 5 and 6). This bleeding always comes from the eroded large tubal vessels, which accounts for intracapsular hemorrhage and for rupture.

Fallacies of Tubal Rupture and Abortion

It is usually stated that ectopic pregnancy is terminated either by "tubal rupture" or by "tubal abortion." These terms I believe misleading because both processes are identical, namely, a rupture of the ovum capsule; one externally (Fig. 4) into the abdominal cavity and the other internally (Figs. 5 and 6) into the tube lumen. The term "tubal abortion" is inaccurate because the condition is not analogous to uterine abortion, with its separation of the ovum

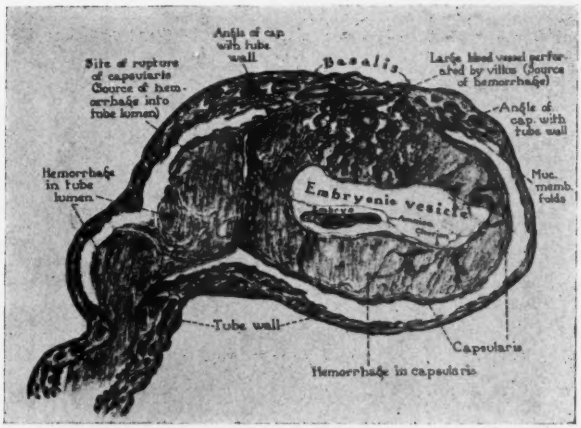
Angle of cap with tube wall
Site of rupture of capsularis (Source of hemorrhage into tube lumen)
Basalis
Large blood vessel perforated by villus (Source of hemorrhage)
Angle of cap. with tube wall
Hemorrhage in tube lumen
Muc. memb. folds
Embryonic vesicle
Tube wall
Capsularis
Hemorrhage in capsularis

Fig. 6. Illustrates site of internal rupture into tube lumen with blood flowing toward the fimbriated extremity.

from its attachment, followed by extrusion. The occurrence of bleeding is common to both, but the immediate source and cause of the hemorrhage are not the same. In uterine abortion the bleeding is due to separation of the attachment of the ovum from the uterus and the blood comes from the edge of the detached decidua or placenta; while in the pregnant tube the source of the bleeding is the inner capsule, ruptured by overdistention of the intervillous spaces and the weakening of the capsule by hemorrhagic infiltration. The bursting of the inner capsule is illustrated in Figures 5 and 6.

I have been able to demonstrate this burst capsule in every specimen of so-called "tubal abortion" examined in serial section. The mechanisms of uterine abortion and "tubal abortion" are so manifestly different that those writers are quite evidently in error who say that "the development of internal rupture is precisely that of incomplete uterine abortion." The term "tubal abortion," from an etiologic standpoint at least, is misleading.

Separation may possibly occur and the ovum be free in the tube lumen, but it certainly is not the general rule. I have several times observed in serial section an ovum apparently free in the lumen (Fig. 9) but by tracing it through successive slides of the series, have always found it still attached to the tube (Fig. 2). The error was occasioned by viewing an eccentric section, outside the basalis. If one will compare Figure 2 with Figure 9, he will see in the former an ovum apparently free in the tube lumen, but in Figure 9 the same ovum is seen to be attached to the tube wall by its original stalk.

Fig. 7. Illustrates large tube vessel being attacked by villus.

It is doubtful that a tube, riddled by erosion (Fig. 1) and stretched almost beyond endurance by distention, can expel a separated ovum. If an ovum does become separated and is extruded from the tube, the mechanism is more likely to be due to the force of the hemorrhage behind it than to contraction of the tubal muscles. I have never seen a tube with an ampullar nidation dilated from the site of its implantation in the ampulla to the fimbriated end, as would be the case if an ovum had passed through it.

It has been said that a relatively large ovum is sometimes seen protruding from the fimbrial end of the tube. When an ovum is seen protruding through the ostium abdominale of the tube its position is not usually due to the expulsion of a separated ovum by the tube, but according to my observations, is due to the implantation of the ovum so near the fimbriated extremity that it grows through the end of the tube, in the direction of least resistance, slowly dilating the ostium abdominale, while remaining attached to its original site (Figs. 10 and 11). I have so frequently been

able to locate definitely the rupture of the internal capsule and have so infrequently observed any evidence of separation at the site of implantation that I prefer the term "internal rupture" to "tubal abortion."

Many writers call a tube which shows no break in the wall an unruptured tubal pregnancy, even when there is blood in the abdominal cavity. This is fallacious, for no ectopic pregnancy is unruptured when there is blood in the abdominal cavity or in the tube lumen. There must be either an external or an internal rupture.

Fig. 8. Illustrates a trophoblastic mass at the end of a villus in the act of perforating tube vessel. Note that the trophoblastic mass is partly within and partly without the vessel wall, like a rivet.

Even the use of the term "external rupture" is not meticulously accurate for, even in fatal cases, there is often no true rupture or break in the wall, but only a small hole eroded by villi. Barbour and Watson reported the case of a woman who bled to death through an eroded hole no larger than a pin head. Figure 12 is a picture of a tube in my collection, illustrating a small, so-called "rupture."

In summary it may be said that every physiologic process occurring in intrauterine pregnancy is repeated in ectopic pregnancy, but from the moment that the ovum penetrates the mucous membrane of the tube, every detail is pathologic because the tube is anatomically unsuited to a pregnancy.

Fallacies in Diagnosis

The diagnosis of ectopic pregnancy does not, as is believed by many, depend upon the so-called "cardinal symptoms" of the con-

dition. The signs and symptoms are so often obscure and atypical that the diagnostic ability of the most expert is taxed to the utmost. There never was a truer saying than that "The most typical thing about an extrauterine pregnancy is that it is atypical." Failure to make a diagnosis occurs all too often. One of the best reports of accurate diagnoses comes from the Johns Hopkins Hospital where, in recent years, 72 per cent of the cases were correctly diagnosed. Even this good report records failure in 28 per cent, or in more than 1 of every 4 cases.

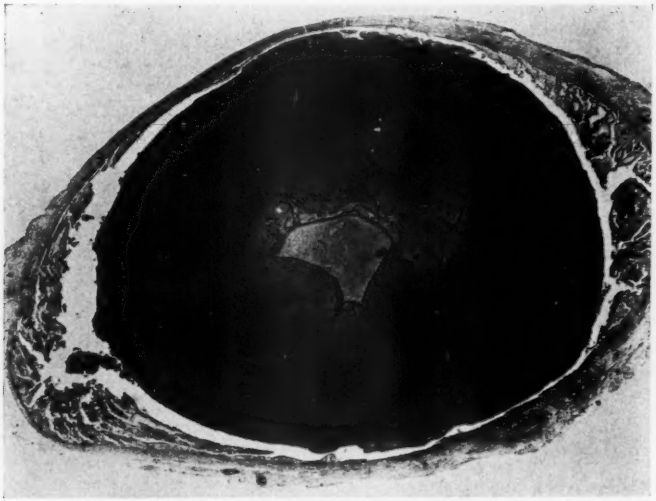

Fig. 9. Illustrates an ovum apparently free in tube lumen. In Figure 2 the same ovum is seen not to be free but attached to the tube wall by a fold stalk.

The symptoms of ectopic pregnancy vary before, during and after rupture. Before rupture there is no blood in the tube lumen or in the abdominal cavity, hence no fever or leukocytosis, and often the mass is too small to be felt, pain is minimal and there is no vaginal bleeding. During the process of rupture there is a moderate amount of blood in the peritoneal cavity, moderate fever and leukocytosis, pain and all other symptoms are increased, and there may or may not be vaginal bleeding. After rupture there is much blood in the abdominal cavity, fever and leukocytosis are usually increased, and there is great pain. Usually an exquisitely tender pulsating mass is felt at the side of the uterus. Extreme pain upon movement of the cervix is characteristic.

I know of no gynecologic condition in which a complete painstaking history is of more value. The events of the immediate past

are most important. A skipped menstruation is always a presumptive sign of pregnancy, but delayed, prolonged or otherwise abnormal menses, a bloody dribbling, or brownish vaginal discharge, accompanied by crampy, or sudden sharp, stabbing pains, recurring on one side of the lower abdomen, and an enlarged soft uterus, with a softened, discolored cervix, excessively sensitive to even the slightest movement, suggest a tubal pregnancy. If there be also an exquisitely tender, pulsating mass at one side of or back of the uterus, moderate fever and leukocytosis, a diagnosis of tubal pregnancy is justifiable.

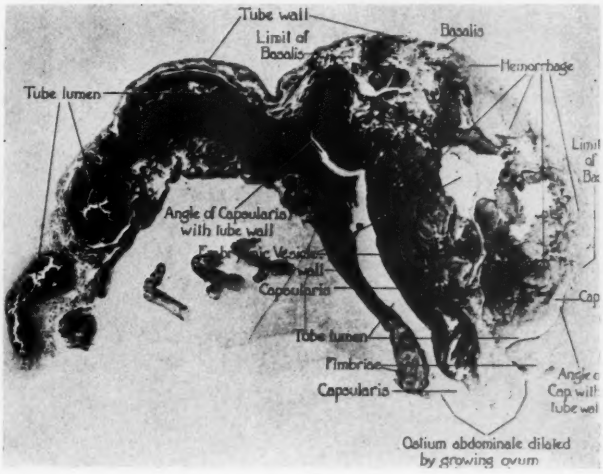

Fig. 10. Illustrates an ovum attached so close to the ostium abdominale that it is growing through it.

The Aschheim-Zondek test, or one of its modifications, is of value only when it is positive. A negative result may be due to the death of the ovum.

The tragedy of ectopic pregnancy is tubal rupture with its accompanying excessive loss of blood. To avoid this, whenever there is the remotest suspicion of ectopic gestation, every effort must be made to establish the diagnosis before rupture. Fortunately, the symptoms during rupture are usually so definite that diagnosis is not difficult. Following rupture, diagnosis is easy but quick action is demanded to save the patient.

The Treatment of Ectopic Pregnancy

In no emergency is the old saying "Diagnosis is the thing" more apropos. Inasmuch as in one of every four cases the diagnosis is

missed, even in skilled hands, our chief hope of reducing the mortality lies in an accurate and early diagnosis.

There are few conditions included under the generic term, "The Acute Abdomen," which can be more readily treated, provided diagnosis can be made before frank rupture. However, keen diagnostic acumen and prompt action are required. The operation for removal of the unruptured tube is simple and rapidly accomplished by one familiar with abdominal operative procedures.

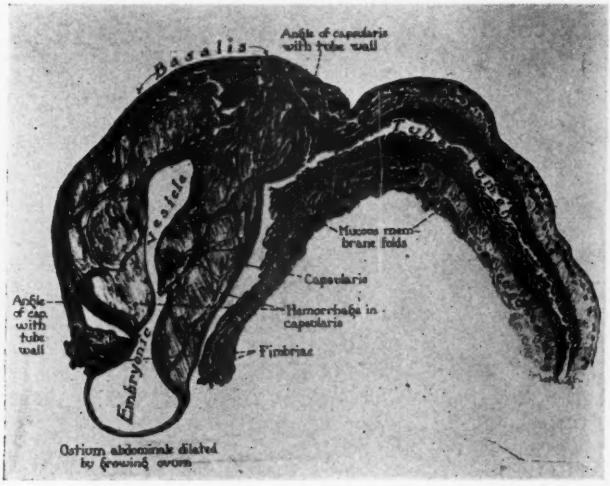

Fig. 11. A drawing of the microscopic specimen shown in Figure 10, diagramatically illustrating the same points.

The outlook is almost as good and the operation little more difficult if the ectopic tube be discovered during the process of external or internal rupture, a process which is often comparatively slow and the symptoms of which are usually definite enough to render diagnosis relatively easy. Although there is pain with signs of bleeding into the peritoneal cavity during the process of rupture, the tube has not yet broken and there is no large hemorrhage, but frank rupture impends. The surgeon must promptly perform simple salpingectomy before necessity demands an operation under conditions of great blood loss and shock.

After rupture, diagnosis is simple. Now, even though there may be alarming loss of blood, shock and collapse, an operation should be done as soon as possible. Until that pumping artery is tied, there is no safety.

The dangerous dictum of Hunter Robb that "the hemorrhage per se is rarely, if ever, the sole cause of death," for a time upset the logical procedure of stopping the hemorrhage. It should not have been necessary for the profession to learn by bitter experience that Robb's was a false philosophy, for that had already been demonstrated by the long known statistics of Parry which showed 67 per cent of deaths from hemorrhage in 500 cases. Schauta also reported the astounding mortality of 86.9 per cent in a group of 121 women not operated upon, while in a group of 123 whose pregnant tubes were promptly removed, the rate was only 5.7 per cent.

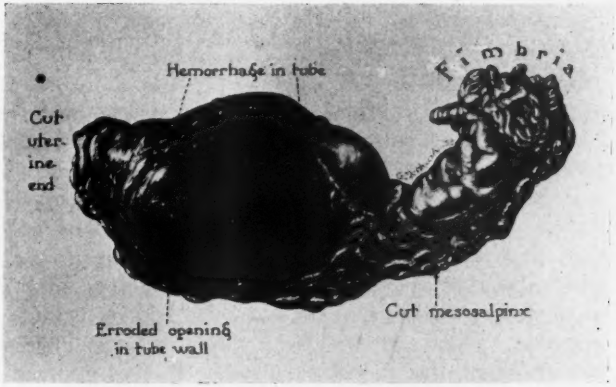

Fig. 12. Illustrates small perforation of tube vessel and tube wall into abdominal cavity.

These human results should have outweighed the animal experiments of Robb. The influence of Robb's theory, however, is still felt and a steadily dwindling number advise delay "to give the patient time to react from 'shock' " before operating. Under this plan precious hours and more precious blood have been lost and the patient usually is in a less favorable condition for operation.

It has been said that the greatest mistake we have made has been to call the condition following rupture "shock." It is not true surgical shock, in which the circulation is unbalanced through vasomotor influences, but is a disturbance of the circulation due to loss of blood. All the symptoms in rupture, which we designate as "shock," are due to loss of blood. Why then await the reaction from "shock" if what we want is "reaction from hemorrhage," which we can quickly obtain by transfusion of blood and the ligation of the bleeding vessels? The ligation, however, must follow the transfusion as soon as possible, else all the gain will be lost.

The term "immediate operation" is apt to convey the idea of hurried preparation, but "operation as soon as possible" means

deliberate but rapid preparation for an operation under as nearly ideal surgical conditions as possible. Here comes the real test of surgical efficiency—preparation, judgment, skill and ability to "make haste without waste."

When a donor is not immediately at hand, remarkable temporary improvement may be obtained by infusion of a glucose solution or even normal saline. More lasting results follow the injection of a solution of gum acacia.

Surgical methods for the treatment of ectopic pregnancy have become progressively more conservative. It is now generally considered unwise to remove the ovary with the pregnant tube. Experience has shown that the ovary can be isolated, without dangerous loss of time, and the tube alone removed.

Unless the patient is in very good condition and haste not imperative, other surgery, such as plastic surgery of the affected tube, as advocated by Sellheim, removal of the opposite tube or appendectomy should be avoided. I believe it is better to remove from the abdomen only enough blood to expose the field of operation, because of the time consumed, the injury to the peritoneum with consequent adhesions, and also because the retained blood will be absorbed to the great benefit of the patient. I have seen the hemoglobin improve 35 per cent within 48 hours when a large amount of blood was left in the abdominal cavity. Bovee reported a case of ruptured tubal pregnancy, with a hemoglobin estimation of 10 per cent, red blood cells 1,300,000, pulse barely perceptible and the respirations short and gasping. Because of the woman's precarious condition no blood was removed. Seven days later, without transfusion, her hemoglobin was 60 per cent and the erythrocytes 3,000,000.

Autotransfusion with the patient's own blood, scooped from the abdomen, citrated and injected into the veins, can be done successfully, but this procedure must be so meticulously carried out that I believe it safer to leave the blood in the peritoneal cavity for absorption. Blood in the peritoneal cavity does not cause adhesions, but trauma from sopping or scooping it out may.

Some of the fallacies in regard to ectopic pregnancy have been pointed out with the hope that by discarding them we may gain more knowledge of what goes on in the tube, which may lead to a better understanding of the causes of the signs and symptoms. As a result, earlier detection and a higher percentage of diagnoses should be made possible and the mortality lowered. Modern procedures have already reduced this 80 per cent.

EVALUATION OF EXCRETORY UROGRAPHY

J. Ullman Reaves, M. D.

Mobile

EXCRETORY urography is the roentgenologic visualization of the urinary tract by the intravenous, oral, subcutaneous or rectal administration of substances that are radio-opaque. Thirty years have now elapsed since the roentgen ray proved its value in the study of urogenital lesions by the successful practice of pyelography. Pyelography was the first step of a then most unpretentious specialty toward the very high plane held by urology today. During this time it has been demonstrated that it is essential that both the clinical picture and an accurate interpretation of the roentgenograms be considered together in any given case. The importance of this coordination has been lost sight of by some of the members of the enlarged field brought to urography within the profession by Von Lichtenberg and Swick when, in 1929, they introduced an intravenous substance to be used in urography. For a time after this introduction retrograde urography was threatened as evidenced by the experience of hundreds of those who have written on the subject of intravenous urography in our own and foreign literature.

The solutions first used in filling the lumens of the upper urinary tract to produce radio-opacity were slowly pushed aside by improved solutions which were less expensive and more comfortable to the patient, thus making for a more normal pyelogram which is easier to interpret accurately. Likewise the solution first used for intravenous urography has been improved by eliminating almost entirely the discomfort experienced in every case, as well as reducing the volume of fluid injected from 100 c.c. to 20 c.c. However, we find ourselves still trying to bring out sharper detail of the roentgen shadow and somewhat divided as to which is the best procedure to adopt. The way for further and general usefulness will be blazed by the substance which is least expensive and best tolerated by the patient, reaching its zenith in the hands of the best interpreters of the roentgenogram in comparison with the clinical diagnosis.

In a large per cent of the cases presented where involvement of the upper urinary tract is suggested by the clinical symptoms we will find the information afforded by the intravenous urogram wholly adequate. It is also true that such information is incomplete in a large number of cases and we must seek additional data before

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reaching an accurate diagnosis. Interpretation of the urogram is frequently difficult and should be made by one who has had extensive experience: this means a urologist or a roentgenologist who has had special training in urologic diagnosis. I recently saw a case in which the diagnosis of probable tuberculosis of the right kidney had been made from history and symptoms, and an excretory roentgenogram of the kidneys. The patient had complained of some right-sided pain and the loss of considerable weight; in the x-ray the filling of the right kidney pelvis was ragged. Further urologic study together with cystoscopy and retrograde pyelography showed a normal right kidney pelvis containing considerable pus which was negative for tubercle bacilli. The lesion of the urinary tract was secondary to a walled-off peritonitis which had existed for such a time as to make it of undetermined origin. Such an error as was made in this case could possibly have been avoided had the diagnostician been more experienced in the interpretation of pyelograms, had his pyelograms been more accurate, or had he not failed to request more complete data or to perform at once further urologic research with the cystoscope. It is well to remember that knowledge gained by the retrograde method of pyelography is wholly anatomic, whereas that obtained by the use of the excretory method is physiologic.

I believe we are safe in predicting that mediums for excretory urography will reach a degree of perfection which will allow visualization of all normal lumens of the urinary tract, thereby enabling us to evaluate physiology in its bearing on the normal movement of the urinary stream, but when there are lesions of the upper urinary tract there are also impairments of renal and ureteral motor function which will interfere with the proper filling of their lumen, and distort the roentgenogram to a like degree. Speaking broadly, the degree of visualization in excretory urography depends upon renal and extrarenal factors determining renal excretion; for example:

1. Where actual or latent uremia is present as a result of poor concentrating power of the kidney, the information gained by excretory urography is meager or may be entirely worthless.

2. In cases of chronic parenchymatous renal disease with poor diuresis or deficient concentration the roentgenogram will be useless.

3. In the majority of cases of renal tumor, minor calices do not show up; the roentgenogram therefore is disappointing if not misleading.

4. As purulent kidney infections have an inhibiting effect on excretion, excretory urography has proven unsatisfactory in cases of pyelonephritis and renal tuberculosis. This is also true in cases of pyuria in infants.

5. The deformities of polycystic disease will be missed unless associated with stasis because of the delayed or diminished excretion associated with this condition.

Many individual problems can be solved by the use of either method, in other situations only one method can be used, and in a great many cases if maximum information is to be elicited both excretory and retrograde urography must be employed. It is simpler and less taxing to subject a patient to excretory urography first, then carry out cystoscopy, with or without retrograde pyelography, should corroborative or supplementary evidence be indicated.

Kidney stones may be silent as far as subjective symptoms are concerned, but they are never silent in their injurious effect on renal tissue, and as a rule they eventually cause complete destruction of the kidney. They usually are dormant for a while and then suddenly do a great deal of damage before the patient is aware of their existence. There is always a chance that the small calculi will pass spontaneously within a reasonable time. They can be watched by means of excretory urography and, should destructive tendencies be evidenced, they can be removed surgically at once.

The greatest problem of excretory urography is in the interpretation of the roentgenogram. Errors of interpretation will undoubtedly arise necessitating correlation with cystoscopic and other data. The excretory urogram will be of greatest practical value (1) in determining the presence of stasis in the upper urinary tract, (2) in investigating cases of suspected rupture of any portion of the upper urinary tract, (3) in aiding in the interpretation of shadows in the upper urinary tract, and (4) in giving a fairly accurate estimate of kidney function. But the absence of concentration in one or both kidneys in a particular case does not necessarily indicate permanent renal damage, as there may be only a temporary reflex anuria. Again, the functional activity of the kidney may be temporarily diminished or perhaps totally inhibited as a result of either occluding lesions or trauma, although the kidney parenchyma itself be intact. This can be accepted as proof that the kidney parenchyma is not permanently damaged beyond repair because of non-visualization at one examination.

Excretory urography furnishes all the data necessary for operation in the majority of cases of lithiasis. Likewise it may provide sufficient data to determine whether or not an abdominal mass is renal in origin. It is by far the best method in distinguishing intraperitoneal from retroperitoneal tumors. Where injury of the urinary tract is suspected, excretory urography should be employed as routine. The best visualization is obtained in tubular damage, especially in cases of obstruction. When severe acute urethral conditions are coexistent, intravenous urography is indicated.

The opinions herein expressed are substantiated by a review of the literature and corroborated by a critical review of 140 consecutive cases in my private practice. The two standard mediums were used in these cases as this series dates from my discarding uroselectan. I have seen no reason to exalt one of these mediums above the other. The large majority of these patients were ambulatory, in which case the urograms were made in my office.

TABLE 1.

Lithiasis, Ureteral	15	Renal Neoplasm	2
Lithiasis, Renal	14	Pyelonephritis	2
Hydronephrosis	8	Chronic Nephritis	1
Pyelitis of Pregnancy	6	Negative Findings	42
Anomalies	3		

Table 1 shows that in two thirds of my cases excretory urography sufficed, and that in one half of these, or in one third of the total cases, the findings were negative. Here we have the urologic standpoint hand in hand with the economic trend of the day. It is interesting to note that all 15 patients with ureteral calculi in Table 1 came in during the acute attack and before the administration of morphia, while each of the 8 patients with ureteral calculi in Table 2 had had morphia at least once before presenting. More errors are caused by incomplete examination than from any other cause. In 42 of the 93 cases in Table 1 the findings were negative, and in Table 2 are listed the 47 cases which required further urologic study with the cystoscope and retrograde pyelography, and in this group there are only 7 cases with negative findings.

TABLE 2.

Lithiasis, Ureteral	8	Anomalies	2
Pyonephrosis	7	Ureteral Stricture	2
Renal Tuberculosis	7	Essential Hematuria	1
Nephroptosis,		Lithiasis in Solitary Kidney	1
Without Hydronephrosis	4	Hypernephroma or Grawitz Tumor	1
With Hydronephrosis	4	Diagnosis Negative	7
Hydronephrosis	3		

When a patient presents symptoms which call for a urologic survey, he deserves a complete examination, and unless we constantly keep in mind that the limitations of excretory urography are indeed numerous we will be led into grievous mistakes in diagnosis and treatment. Bilateral and complete examination when proper methods are used is not, in most instances, dangerous or disturbing to the patient; they are not expensive in time or money; therefore, when

we are in doubt after viewing the excretory urogram, let us remember that we have tried only one method of investigation, and let us not hesitate to seek the benefit afforded by the older cystoscopic method of approach.

In closing I wish to state that it is manifestly the opinion of all urologists that excretory urography has its limitations; this fact was concisely stated by Bransford Lewis: "Intravenous urography is a negative evidence when retrograde urography is a positive evidence. It is invaluable in certain cases and extremely helpful in others, thus justifying a prominent place in diagnostic urology."

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TUMORS OF THE NECK

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IN years gone by major lesions of the neck furnished one of the most fertile fields for the really skilled surgeon. It has ceased to be such because it was discovered that many of the diseases of this region responded to treatment by x-ray. It is the purpose of this paper to examine some of the more common of these diseases and to inquire whether or not the patient has been benefited on the whole by the surrender of this important field to the x-ray man.

The major lesions to be examined are Hodgkin's disease, the lymphosarcomas and the lympho-epitheliomas. Other lesions from which these must be differentiated are comparatively rare yet important enough to merit consideration; among these are the cysts and the malignancies resulting therefrom and the neurogenic tumors. Each of these will be examined in turn. The first three mentioned are characterized by being more or less sensitive to x-ray and hence have come to be grouped together, while the others are refractory to radiation.

Because some lesions of the neck in which radiation is not only useless but actually harmful are often confused with the radiosensitive diseases, a clinical differentiation is mandatory. The ability to differentiate these several lesions from the lymph tumors is dependent on the observer's experience. This experience is gained only by an exact understanding of each case observed and can be achieved only by the surgical removal and microscopic examination of each tumor in question.

Hodgkin's Disease. Hodgkin defined the disease as "a gradually progressive enlargement of the lymph glands, beginning usually in the cervical region and forming nodular growths in the internal organs, resulting in anemia and usually a fatal cachexia." As a summary of the entire life history of the disease this definition covers the picture well.

To pathologists the disease is a granuloma but since in the beginning it is a local disease the surgeon may regard it as a tumor. After it ceases to be such it passes beyond the domain of the surgeon. From the surgeon's point of view Hodgkin's disease is characterized by an enlargement of individual lymph nodes, beginning usually in one (Fig. 1), or several in succession (Fig. 2); in the

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late stages a large conglomerate mass results easily diagnosed by inspection (Fig. 3). Later on other glands are involved when the pathologist sees them and it ceases to be a surgical disease. Furthermore in the early stages it plays its course within the capsule of the gland, leaving the capsule uninvaded, and as a result the glands remain discrete and freely movable within the surrounding tissues. This fact not only expresses its clinical characteristic but provides the indication for surgical removal. So long as the glands are soft and easily movable and have not extended beyond the possibility of complete ablation, operative removal is the treatment of choice.

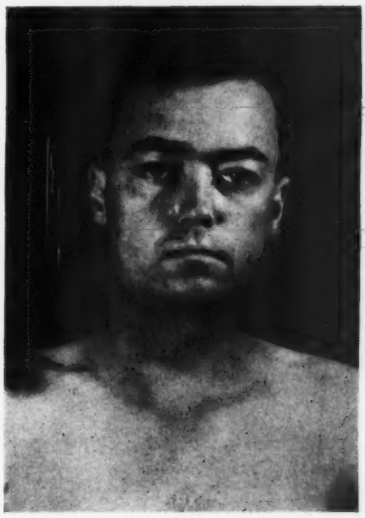

Fig. 1. Hodgkin's disease. A single ovoid tumor, movable on palpation. No other enlarged glands discovered at operation.

True, experience has taught that when removed by operation there is invariably a recurrence by the involvement of other glands, either in the region operated on or elsewhere, most commonly on the other side of the neck. The patient died in from two to four years. Experience also has taught that when treated with x-ray the tumors promptly disappeared, recurred and the patient died in from two to four years. That the average duration of life is longer after radiation than after the old radical operation has not been proved. True enough, some lesions of the neck have been cured by radiation. Only cases proved by microscopic examination are admissible for comparison.

It was a surprise to me to learn on investigation, that the average duration of life is about the same whether treated by x-ray or by operation. Such being the case it is worth while to examine the subject anew. Perhaps a combination of our resources will secure better results.

The question now is whether or not patients are improved by radical operation followed by radiation as in the treatment of cancer of the breast. One method of finding out is try and see. Therefore

Fig. 2. Hodgkin's disease. Ovoid on inspection, multilobular on palpation and at operation.

for some years my practice, when confronted by a patient who presented glands accessible to operation, has been to do a radical dissection of the glands of the neck and to follow this by x-ray. The combined treatment, it seems to me, gives better results than treatment by either measure alone.

At least one definite result is immediately achieved by operation, namely a definite diagnosis. True enough, the clinical diagnosis in well established cases is quite accurate, but when a single gland is involved diagnosis is seldom certain in the clinic. Tuberculosis, particularly, may begin in a single gland and be indistinguishable from early Hodgkin's disease. Even a pyogenic gland may resemble a Hodgkin's gland, as I have found often enough to my chagrin. If such cases are treated by radiation the prognosis is of course good.

In most cases only when the gland is removed giving tissue for examination can the diagnosis be certainly established. Too often a biopsy specimen is depended on for a diagnosis. The pathologist in such cases obtains inadequate material because when biopsy is done in most cases a small or remote gland is removed for microscopic examination. The result often is an indefinite diagnosis, indefinite because the complete picture has not yet developed in the small outlying gland. Only by examination of a major gland is a microscopic diagnosis possible.

Fig. 3. Hodgkin's disease. Distant glands involved. Marked anemia.

The primary treatment by x-ray is alleged to be more pleasant to the patient than a block dissection. This is not true. The removal of the glands of the neck under local anesthesia produces less bodily discomfort than does an x-ray treatment which compels the patient to rid himself of the tumorous mass by absorption and elimination. Patients refuse food and cigarettes over a longer time when radiated than after a block dissection of the neck. The scar resulting from operation is slight and, considering the ultimate prognosis of the disease, entirely beyond the point.

Lymphosarcoma. Lymphosarcoma, contrasted with Hodgkin's disease, is made up of a single tumor. It begins in the lateral side of the neck and continues as a single tumor mass instead of a number of discrete tumors (Fig. 4). It appears beneath the upper end of the sternomastoid muscle forming a fairly well circumscribed

tumor which carries the muscle on its summit. Less commonly it begins in the anterior triangle or in the supraclavicular fossa. The capsule is early invaded and the mass becomes fixed. It tends to approach the surface, cause a reddening of the skin and, when the gland is soft and semifluctuating, it invites the unwary to incise it, believing it to be a localized abscess (Fig. 5).

Extension is by way of the lymphatics, notably toward the mediastinum. The chief tumor may be located here and the neck tumor may be a projection of the mediastinal mass upward into the neck.

Fig. 4. Lymphosarcoma. Bosselated but solitary tumor, skin unchanged, elastic, even semifluctuant.

Even though presenting a single tumor early in the course of the disease the possible extensive invasion of the surrounding tissues, particularly about the jugular vein high in the neck, must be thought of before operation is undertaken. However, even though the extracapsular invasion is considerable, making the operation very difficult, freedom from local recurrence may extend over a period of years.

Here, also, if the disease can be completely removed by block dissection it should precede treatment by radiation. I once saw complete freedom from recurrence for a period of three years, in a case which involved the large nerves and vessels and the adjacent muscles. I removed everything, common carotid artery, the nerves and the sternomastoid muscle and everything between. I have

never seen in a proven case treated by radiation an equally good result.

While the diagnosis in the clinic is fairly accurate, yet errors are sometimes made even by those who should know better. No diagnosis should be accepted that is not verified by microscopic examination, and as for myself I would add that no microscopic examination should be accepted as lymphosarcoma unless the patient ultimately dies of recurrence.

Fig. 5. Lymphosarcoma. Many incisions had been made under the impression that suppuration was present.

The question of the value of operation and radiation is the same as for Hodgkin's disease. What is removed by operation need not be absorbed. Here likewise extensive operative removal, followed by the use of x-ray, seems to offer the patient the longest period of relief with the minimum of discomfort.

Lympho-epithelioma. These tumors are characterized by their location high under the angle of the jaw, firm and fixed from the beginning (Fig. 6), and often preceded by, associated with, or followed by a tumor of the pharynx. The term signifies that the tumors are made up of epithelial cells and lymphocytes. As a matter of fact the epithelial origin of the cells has not been proved. These are said to be radiosensitive but some of my patients have resisted this treatment. Nevertheless it is the treatment almost universally employed. Recurrence is prompt no matter what the treatment.

The first manifestation of the disease in many cases is a tumor at the angle of the jaw (Fig. 7). It is situated higher and more

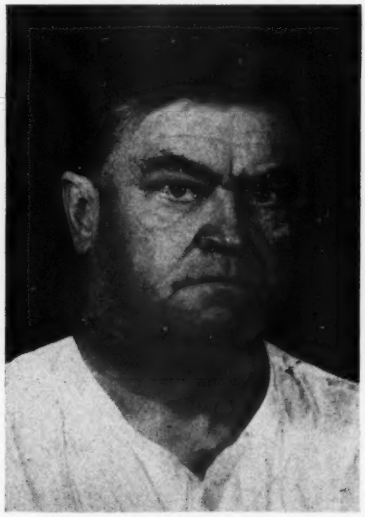

Fig. 6. Lympho-epithelioma of medium grade. The tumor was ovoid, slightly bosselated, firm but elastic.

Fig. 7. Lympho-epithelioma the size of a hickory nut occupying the typical position below and behind the angle of the jaw.

anterior than either Hodgkin's disease or lymphosarcoma. The tumor continues to enlarge as a circumscribed mass and continues as such for many months. It is fixed even in the beginning. The lympho-epitheliomas are firmer to the feel than lymph tumors but more elastic than epithelial metastases. The lesion may remain unilateral many months or throughout the course of the disease but in many cases the like region at the other side of the neck becomes involved. These tumors do not invade the skin; even in the case of recurrence after operation. In this they differ from the lymphosarcomas.

Fig. 8. Neuroblastoma forming a firm slightly ovoid tumor in the midposition of the neck below and behind the sternomastoid muscle.

Here too in my judgment the removal of the mass in the neck is indicated for the reason given above; besides it allows a more ready access to the pharyngeal growth in the x-ray treatment. The removal of an unsightly mass is pleasing to the patient, to say the least. Of course, if the dominant tumor is located in the pharynx block dissection of the neck is not to be advised. Though the tumor is situated high up under the angle of the jaw I have never encountered insuperable difficulty in securing the internal jugular vein, the only step in the technic that need cause apprehension.

Neurogenic Tumors. As a corollary to the preceding these rather rare tumors may resemble the foregoing, being situated in the lateral side of the neck (Fig. 8). They lie deeply, not fixed yet not

freely movable. Operated on early, long periods of freedom from recurrence ensue, some of my cases having disappeared from obser-

Fig. 9. Lymphangioma occupying the supraclavicular fossa. The skin is unchanged, the mass very soft on palpation.

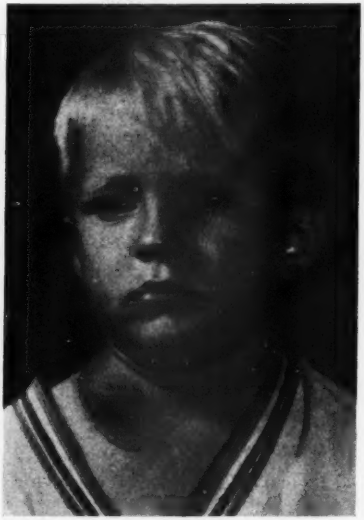

Fig. 10. Hemangioma of the supraclavicular fossa. The bluish tumor is apparent through the skin.

vation without recurrence. Late operation is hazardous and futile.

The foregoing lymphatic tumors present the effective field for the combination of operation and radiation. The following group of non-malignant diseases often treated by radiation without results or with definite harm are definitely cured by operation.

Angiomas. These tumors are made up usually of lymph vessels, less commonly of blood vessel origin, are congenital in origin but may not gain a prominent clinical place until later years. They are situated beneath the jaw in the neck or in the supraclavicular fossa.

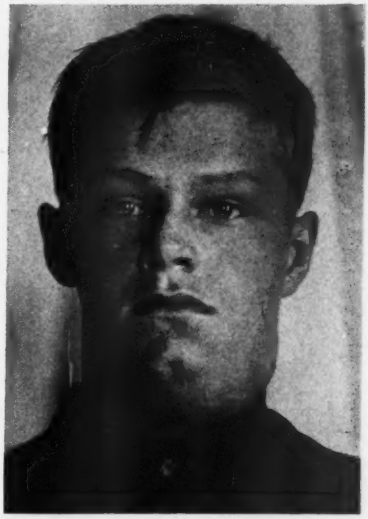

Fig. 11. Lymphangioma of the submaxillary region. Radiation produced in a few days a hard painful mass.

The lymphangiomas are covered by normal skin (Fig. 9) but the hemangiomas may show a characteristic bluish discoloration (Fig. 10). They present rounded tumors, soft, elastic and immovable. The results of radiation are not constant. They may regress, or they may undergo an intense reaction which may result in the augmentation of the size of the growth (Fig. 11) which in one of my patients resulted in malignant tumor. Here certainly radiation is not the treatment of election.

Gill Cleft Cysts. These cysts are restricted in the line of the embryonal rests. They develop near the angle of the jaw. The growth is gradual. When small they are tense and elastic and may easily be mistaken for lymph gland tumors. As they grow larger

their cystic nature is obvious (Fig. 12). They may form large globular tumors in the neck and may protrude into the floor of the mouth. Their situation, their slow growth, and the feel, makes the diagnosis easy but if they have been x-rayed under the diagnosis of sarcoma the clinical diagnosis may not be easy, particularly if the history is confusing.

It may be mentioned in passing that many gill cleft cysts are now regarded as aberrant thyroids. Whose idea this was I do not know.

Fig. 12. Gill cleft cyst. Ovoid soft elastic tumor palpable in the floor of the mouth when pressed on externally.

Some of them contain papillary excrescences that may be made to resemble, in one's mind, like structures in fetal adenomas. The fact that these gill cleft cysts are intimately attached to the carotid sheath is sufficient to exclude any association with aberrant thyroids. Besides, some of these cysts are partly lined with squamous epithelium, a thing impossible in thyroid acini. Furthermore these papillarly cysts can be traced directly to the rare papillary cysts of the lymph glands first described by Warthin.

Thyroglossal Cysts. Thyroglossal cysts lie in the midline since they arise from the thyroid duct so that they cannot be mistaken for any other tumor.

Dermoids. Submental dermoids are not rare. They form rounded masses confusable only with lipomas. Of course removal ends the story. When subject to radiation they react promptly with in-

tense inflammation in the wall of the cyst and the adjacent tissue. This reaction may be so intense as to resemble a Ludwig's angina. If the diagnosis of sarcoma was made before radiation the indurated mass may make operation difficult. The very fact that an intense reaction developed following x-ray treatment is sufficient to exclude sarcoma.

Rare Tumors. Less common tumors found in the neck are the carotid tumors situated at the point of bifurcation of the carotid (Fig. 14) and characterized by their round and ovoid shape and

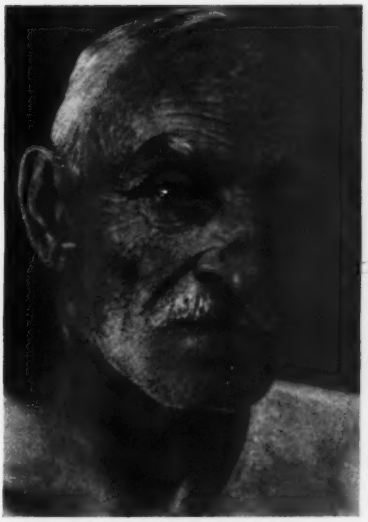

Fig. 13. Carcinoma of a gill cleft. The tumor was hard, nodulated and but slightly movable. No recurrence after radical operation followed by x-rays.

by their lateral mobility but the fixity when movement up and down is attempted. They are benign if removed early.

Still less common are the malignant tumors developing in gill cleft rests. They form tumors below the angle of the jaw (Fig. 13). Their density characterizes them as epithelial malignancy and the absence of a primary tumor together with their location fixes the diagnosis. However, mistakes are possible because a primary tumor may escape detection and metastatic nodules are sometimes solitary.

On the whole it may be stated that any tumor found in the neck which is technically removable should be subjected to operation. If the tumor proves to be benign operation cures it. If it belongs to the lymphoid group radiation may be begun as soon as the wound is healed. The patient has secured a definite diagnosis without

sacrificing anything. It secures tissue which makes a pathologic diagnosis possible, thus contributing to the education of the surgeon. If the tumor is benign the patient has the satisfaction of knowing it which is vastly more satisfactory than thinking he is being treated for a malignant disease.

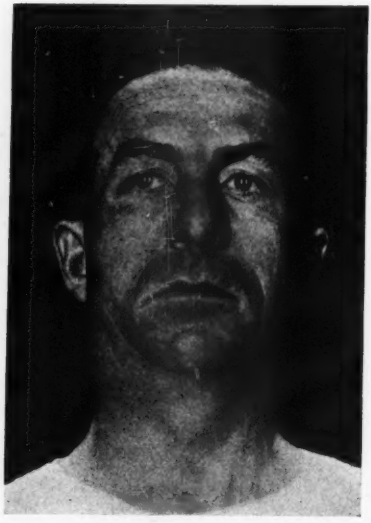

Fig. 14. Carotid tumor. A round nodule the size of a walnut occupied the crotch of the carotid bifurcation. No recurrence after eighteen years.

CONCLUSIONS:

1. Surgeons have been too ready to send neck tumors, not definitely diagnosed, to the radiologist.

2. Operation secures tissue which makes diagnosis possible.

3. Radical operation alone on the average secures relief for as great a length of time as radiation alone. The two together may secure better results.

4. Radical operation causes the patient no greater inconvenience than the absorption of the tumor after radiation.

5. The sum total of our knowledge of surgical pathology is enhanced by the study of the tissue removed.

OBSCURE DIGESTIVE DISTURBANCES CAUSED BY LESIONS OF THE LOWER PORTION OF THE ESOPHAGUS

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DYSPHAGIA is the most frequent symptom of esophageal disease and when it is the presenting complaint the likelihood of the patient's having a lesion involving the esophagus should receive primary consideration. However, a considerable number of patients having lesions in the esophagus may complain of a variety of symptoms and although dysphagia may be present, other symptoms may predominate.

Carcinoma of the esophagus and cardiac portion of the stomach is usually associated with dysphagia, but distress after meals, gas on the stomach or epigastric pain may be the only complaints in instances in which the lesion is limited to a portion of the lumen of the esophagus. These latter symptoms may lead to the diagnosis of gallbladder disease or peptic ulcer, especially if the difficulty has been of long duration.

In cardiospasm, epigastric pain is frequently an early symptom and may be present for many months or years before other symptoms appear. During this stage of the disease differentiation of this type of pain from that associated with gallstones is a particularly difficult problem. In other cases regurgitation from the esophagus may be considered as actual vomiting of food from the stomach and may lead to an erroneous diagnosis of obstruction at the pylorus. Although the majority of diverticula of the esophagus do not produce symptoms, those just above the cardia may become very large and cause epigastric distress and regurgitation of food and mucus. Difficulty in swallowing is rarely experienced by a patient having this type of lesion.

Inflammation involving the lower portion of the esophagus may be associated with burning beneath the sternum and hematemesis. In the acute stage such inflammation can rarely be differentiated from acute gastritis and if it becomes chronic, the symptoms may simulate those of peptic ulcer. Healing of the ulceration may result in the formation of a stricture with associated dysphagia.

Benign tumors of the esophagus are rarely observed and do not produce symptoms of obstruction until they have attained considerable size. They may produce vague digestive discomfort and in

one of my cases regurgitation of a long pedunculated tumor was the first indication of esophageal disease.

Hernia of a portion of the stomach through the esophageal hiatus in the diaphragm is so closely associated with the esophagus that it can be considered an esophageal lesion. Unless the possibility of hernia is considered in all cases of digestive distress, it will be overlooked frequently. The congenitally short esophagus with hernia can not be differentiated from para-esophageal hernia on the basis of symptoms, and careful roentgenoscopic study and esophagoscopy are necessary before the differentiation can be made. Discomfort in the epigastrium associated with pain under the left breast, especially on reclining, should suggest the presence of hernia and when accompanied by gaseous distention after meals and slight dysphagia, the likelihood of hernia is greatly increased.

Too frequently it is assumed that indefinite digestive discomfort characterized by distress after meals, gas, fulness in the epigastrium and epigastric pain are the result of disease in the gallbladder. Examination of almost every gallbladder removed at operation will reveal evidence of infection and the physician and patient will be disappointed when removal of that organ fails to relieve distress which was thought to be the result of cholecystitis. A more careful preoperative consideration of the esophagus and cardiac portion of the stomach in patients suffering from obscure digestive discomfort will eliminate many errors in diagnosis and decrease the frequency of useless operations on the stomach and gallbladder.

Medical Arts Building.

JAMES MARION SIMS: THE FATHER OF MODERN GYNECOLOGY

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Birmingham

WHAT can be said of Marion Sims that is not already known to all physicians? Certainly the great achievements of his life are fixed in the memory of every surgeon who knows anything of the science and practice of gynecology. History, tradition, or even rumor fail to tell of one marring act in the private life or professional life of Sims. His public virtues and many valuable contributions to medicine made him tower above his contemporaries as Saul above Israel.

The story of Sims' life is epitomized in the inscription on the granite pedestal of the splendid bronze statue erected to his memory in New York City, "by his professional friends, loving patients, and many admirers throughout the world":

J. MARION SIMS, M. D., LL. D.,
BORN IN SOUTH CAROLINA, 1813,
DIED IN NEW YORK CITY IN 1883.
SURGEON AND PHILANTHROPIST.
FOUNDER OF THE WOMAN'S HOSPITAL IN THE STATE OF NEW YORK
HIS BRILLIANT ACHIEVEMENTS CARRIED THE FAME OF AMERICAN SURGERY THROUGHOUT THE CIVILIZED WORLD.
IN RECOGNITION OF HIS SERVICES TO THE CAUSE OF SCIENCE AND MANKIND, HE RECEIVED THE HIGHEST HONORS IN THE GIFT OF HIS COUNTRYMEN, AND DECORATIONS FROM THE GOVERNMENTS OF FRANCE, PORTUGAL, SPAIN, BELGIUM, AND ITALY.

There are, however, two important omissions in the inscription on this monument. The first being that Marion Sims was the father of the great specialty of gynecology; and the second, that Montgomery, Alabama, was the city wherein was lit the wonderful genius of the man. It was there that he made the discoveries upon which, even to this day, is based much of the scientific and rational treatment of the diseases peculiar to women; and it was in Montgomery that he performed the first successful operations, that were destined to make his name famous the world over, giving him for patrons crowned heads of Europe and which offered relief to thousands of women who up to that time were doomed to lives of suffering and

misery. The first gynecologic hospital in the world was established by Sims in Montgomery in 1845. Montgomery, Alabama, is as certainly the birthplace of gynecology as Athens was of freedom.

It is a pleasure to think of this man who grew so fast, so strong, so great, that he is claimed by states and a nation. Alabama has the strongest title to him, though South Carolina, the state of his birth, and New York, the state of his adoption in the later years of his life, hotly contest Alabama's claims. It is certain that the best years of Sims' life were spent in Alabama, first as an humble country doctor, living in a log cabin at Mount Meigs, from 1835 to 1840, then as a surgeon in Montgomery until 1853, when he moved to New York where he lived the greater part of the time until his death, though he spent ten years practicing his profession in Paris, London and other European cities.

Admiral Schley, who commanded the American ships that destroyed the Spanish fleet in Santiago Bay, when another claimed credit for the victory, said: "There is glory enough for all of us in this great triumph of the United States Navy." There is glory enough in the achievements of Marion Sims for South Carolina, Alabama, New York, France and Great Britain to have a generous share. Since afflicted women wherever scientific medicine is practiced, have been, are, and always will be, the benefactors of Sims' genius, he may be said to be, in spirit at least, a citizen of the world.

Marion Sims, the South Carolinian

Heredity and Early Environment. James Marion Sims was born January 25, 1813, in Lancaster County, South Carolina, not far from the birth place of another great American, Andrew Jackson. Both Sims' paternal and maternal ancestors fought with distinction in the Revolutionary War. His father, a hardy pioneer, was a farmer, store keeper, inn keeper and at one time sheriff of Lancaster County. His mother, Lydia Mackay, of Gaelic origin, with the blood of the MacGreggors and McAlpins coursing in her veins, must have been a noble woman. She was adored by her son Marion. He describes her as "a handsome, middle-sized woman with rich auburn hair, the best of mothers and the most untiring worker I ever knew. She spun and wove the cloth, cut and made the clothes commonly used at home, and did all of her own housework in her early life."

Sims' early environment, as a country boy who learned self reliance early in life, no doubt was a factor in moulding the man to think for himself, and to dare and do what no man had ever done before. His boyhood teachers, rigid disciplinarians, demanded dili-

gence in study, at the end of the rod; but they never broke the spirit of the young South Carolinian. He was the culprit in a number of school episodes; and admits having told a lie to save himself from the dire punishment that would have been his had his teacher learned that it was he who fastened a pin in the center of the master's chair.

College Training. Sims began the study of the classics, Latin and Greek, history and higher mathematics in Franklin Academy in Lancaster. He then went to Columbia College, now the University of South Carolina, where he graduated in December, 1832. Sims said of himself as a college student: "I was never remarkable for anything, except good behavior. Nobody ever expected anything of me, and I never expected anything of myself."

Sims' college training was not with the idea of his becoming a physician. His mother wanted him to become a minister and his father insisted upon his studying law; but after graduating in a literary college, he decided to study medicine, much to the disgust of his father, who said: "Medicine is a profession for which I have the utmost contempt. There is no science in it. There is no honor to be achieved in it; and to think that my son should be going around from house to house through this country, with a box of pills in one hand and a squirt in the other, to ameliorate human suffering, is a thought I never supposed I should have to contemplate."

Sims' father, however, accepted his son's decision to study medicine and Marion, after a few months' study in the office of Dr. Churchill Jones in Lancaster Medical School, was sent to the Charleston Medical School for one year. There he was diligent in his studies, particularly in anatomy, which he declared "was fascinating, and besides I derived a practical knowledge from it which I could appreciate, and could understand, and carry away, and knowing that I was doing something toward laying deeper the foundation for knowledge to come."

Sims evidently excelled in his work in the Charleston Medical School, because he was elected valedictorian of his class, an honor which he declined because he did not believe himself capable of preparing an address worthy of his class. The following year he went to Jefferson Medical College in Philadelphia where he graduated in March, 1835. There he studied hard, and in addition "found time for the dissection of a few subjects." After graduating he attended a private course on "Regional Anatomy and Surgical Anatomy" under Professor Patterson.

Stimulating Humility. Sims' humility was pathetic, but of the kind that stimulated him to study and learn more about his profession.

He said after graduating: "I felt absolutely incompetent to assume the duties of a practitioner. I presume I could have gone into the dissecting room and cut down upon an artery, and put a ligature around it, but I knew nothing at all about the practice of medicine. I had had no clinical advantages, no hospital experience and had seen nothing of sickness."

With this attitude of mind it is not surprising, that after the loss of his first two patients in his home town, Lancaster, he became so discouraged that he tore down his sign, threw it in a well, closed up his office, and made up his mind as he said: "To leave my country for my country's good and establish a home far in the West—in Alabama."

While Sims never lived in South Carolina again, his devotion to his home people and his native state never wavered. After he was established in practice at Mt. Meigs, Alabama, he returned in December, 1836, to Lancaster to marry his boyhood sweetheart, the adorable Theresa Jones, the daughter of his preceptor, Dr. Churchill Jones.

South Carolina Memorials. That Sims always kept in touch with affairs in South Carolina, and that "old Lancaster" was ever close to his heart is shown by the fact that after the Civil War he sent from Paris 5,000 francs for the relief of the needy in his old old home county. He later added a donation with which "a spacious mansion and 60 acres of land" were purchased as a home for the helpless indigent. In honor of its founder, this charitable institution which is still in existence, was called "The J. Marion Sims' Asylum for the Poor."

In 1877 Sims, with his devoted Theresa, returned to visit the scenes of their childhood. They spent ten days in Lancaster, with relatives and friends; and then Sims went to Columbia where he was acclaimed the most distinguished alumnus of his alma mater, the University of South Carolina.

South Carolina not only proclaimed Sims as her greatest son during his life; but half a century after his death she placed a statue of him by the side of John C. Calhoun in Statuary Hall, in the United States Capitol at Washington. There, near the statue of Sims, Georgia placed a marble memorial to Crawford W. Long, the discoverer of surgical anesthesia; and Kentucky has erected a statue to Ephraim McDowell, the father of abdominal surgery. Thus the South's great triumvirate of surgeons, Marion Sims, Crawford W. Long and Ephraim McDowell, occupy a niche in the Nation's Temple of Fame, as three of the greatest benefactors of mankind in the history of the world.

South Carolina, not content with her national memorial to Marion Sims, felt that there should be a shrine dedicated to him on the grounds of her State Capitol in Columbia, where her sons of this and future generations may go and receive the inspiration to emulate his glorious example. The credit for the erection of this state memorial to Sims should be given to the Woman's Auxiliary of the South Carolina State Medical Association, under the leadership of its President, Mrs. H. M. Stucky, of Sumter. This organization raised $3,000 largely through five dollar subscriptions from South Carolina doctors, who also aided in securing an additional appropriation of $3,000 from the State Legislature. South Carolina may well be proud that Marion Sims was born, reared and educated within her borders; and her citizens, particularly her physicians and their wives, are to be commended for their zeal in efforts to see that due credit is given to her most illustrious son for his great achievements.

Marion Sims, the Alabamian

Pioneer Practitioner. Marion Sims, following what he regarded as his dismal failure as a practitioner of medicine in his home state, with deep humility and the determination as he said "to make up my deficiency by hard work," left Lancaster with his father on October 13, 1835, for a three weeks trek over country roads and mostly Indian trails, to Mt. Meigs, Alabama.

There were two doctors practicing medicine in Mount Meigs at the time, and after observing their methods of practice, i. e., bleeding, purging and starving their patients, Sims said: "The practice at that time was heroic; it was murderous. I knew nothing about medicine but I had sense enough to see that doctors were killing their patients; that medicine was not an exact science; that it was wholly empirical, and that it would be better to trust to nature than to the hazardous skill of the doctor."

It was evident that Sims was not only dissatisfied with himself but with his profession as then practiced. He relates that when he was called to see his first patient he at first declined to go saying: "You want an older man than I am, and a man with experience." However, he did visit the patient, who later died of puerperal sepsis.

Draining a Probable Appendiceal Abscess. Sims' second patient, however, proved that he could think for himself and disregard precedent in the practice of medicine. He found the patient, a Mr. Adams, who had been ill for two weeks, "emaciated to a skeleton, the right side of the abdomen was higher than the other." When

Sims discovered fluctuation in what appeared to be an inflammatory mass in the right side he said: "There is matter in this belly and it must come out or this man will die." Not satisfied with Sims' diagnosis and the radical treatment he advised, another doctor was called, who chanced to be a graduate of Jefferson Medical College from which Sims had been graduated. He disagreed with Sims, diagnosing the case as "fungus haematodes" and opposed an operation. Sims insisted that "we ought to give him a chance for his life by sticking a knife into it." There being no other doctor available, Mr. "Billy" Dick, the sage of the neighborhood, was called in to decide whether or not to operate. Sims convinced him that the operation gave the man his only chance to live.

Sims' first operation, performed without an anesthetic, is a classic description of what probably was the first drainage case of an appendiceal abscess ever recorded in literature. Sims said: "Pulling out a bistoury, I plunged it into his belly. I think it was one of the happiest moments of my life when I saw the matter flow, and come welling out opposite that bistoury. It discharged two quarts at once, and continued discharging for two or three days. A few days after that Mr. Adams was able to walk out, and a week after he rode over to Mr. Dick's, seven miles, and dined."

Sims thought the abscess was from the liver, which is of course possible, but it seems probable that had it been an amebic abscess, Sims would have mentioned that the patient had a history of dysentery; and the rapid and complete recovery following the evacuation of the abdominal abscess would not have taken place had the abscess been of amebic origin, because the amebiasis would have persisted after the operation.

The success of this operation immediately established Sims as a surgeon, and patients from far and near came to him at the little settlement of Mount Meigs.

The Ravages of Malaria. Sims' description of the ravages of malaria in and around Mount Meigs in the summer and fall of 1836, before the general use of quinine, tells the story of why the Southern States have a population of less than the states with colder climates, in which the malarial mosquitoes do not thrive. He said: "The whole country was down with malarial fever. There were not enough well people to wait upon the sick ones. Death seemed to walk in the wake of the doctors. I have never known of such a mortality as there was at that time. Scarcely a single family escaped, and the whole country was left in mourning. One poor fellow, living across from us, who had moved there only six months before from Georgia, lost his wife and two children and the only

negro he had. When he went to bury his wife there was no one to help him, or that was well enough to follow her coffin, but himself and two or three negroes that officiated at the grave."

Georgia, Alabama, Mississippi and Louisiana would today be among the most populous and prosperous states of the Union had not such a large proportion of the early settlers of those states died of malaria, yellow fever, dysentery and other tropical diseases, some of which were no doubt brought into the South by African slaves.

On the 4th of September, 1836, Sims was stricken with pernicious malaria and barely escaped with his life. His refusal to be bled by his attending physician probably saved his life and he recovered after a siege of several months.

In 1838 he came near abandoning the profession of medicine to go into business with a friend in Vicksburg, Misslssippi. The venture failed and he moved from Mount Meigs across Cubahatchee Swamp, to Cubahatchee (now called Shorter's), about ten miles from Tuskegee. There he prospered and was content until he was again stricken with malaria in 1840. He probably would have died had he not sent for Dr. Holt of Montgomery who gave him 30 grains of quinine that prevented another paroxysm of pernicious malaria. Following his recovery Sims moved to Montgomery where he slowly regained his health and soon built up a large and lucrative practice.

Sims was particularly interested in surgery and performed many operations that had not been attempted in Montgomery before. One successful case of severe and horribly disfiguring harelip in a young lady gave him a considerable reputation and stimulated his interest in plastic surgery.

Devising the Operation for Vesicovaginal Fistula. Marion Sims' simple story of the incidents that led up to his undertaking to devise an operation for vesicovaginal fistula, the delineation of his failure for four years, and the final success of his efforts to relieve this hitherto hopeless condition, make one of the most thrilling chapters in medical literature. It was an accident that Sims, in the course of six weeks, was called upon to treat three cases of vesicovaginal fistulae in slaves, who because of their disability were hopeless invalids and valueless to their owners; but the perfection of the operation was the result of definite ideas of the problems involved in devising a cure for vesicovaginal fistula, combined with infinite patience, courage and perseverance.

The success of Sims' operation for vesicovaginal fistula depended upon his ingenuity in devising a number of instruments and in per-

fecting procedures in vaginal surgery that never before had been accomplished. The first step followed the accidental discovery in the examination of a woman who had been thrown from a horse, that atmospheric pressure will balloon the vagina, so that the vesicovaginal septum may be clearly visible for operation. Sims first used the handle of a pewter spoon to open the vagina to atmospheric pressure, and to hold it open, and then he invented his speculum, which has not been improved up to this time. He then devised a retention catheter to drain the bladder and prevent its distention by urine. The third step was to use the silver wire suture, instead of silk; and the fourth was the use of perforated shot to hold the sutures in place.

It required several failures in operating upon Anarcha, Betty and Lucy, before improved methods had corrected the faults in technic of former operations; but Sims did not despair as did his associates and some of his relatives, who begged him to devote himself to patients who could pay instead of breaking down his health from overwork in quest of the impossible. But genius is not easily discouraged and Sims continued until May, 1849, when with "palpitating heart and anxious mind" he found that he had cured Anarcha—the first time in the history of the world that an operation for vesicovaginal fistula had been performed successfully.

Sims' exuberant gratification at his success was pardonable. It was expressed as follows: "In the course of two weeks more, Lucy and Betsy were both cured by the same means, without any sort of disturbance or discomfort. Then I realized the fact that, at last, my efforts had been blessed with success, and that I had made, perhaps, one of the most important discoveries of the age for the relief of suffering humanity."

Slave Heroines. It was fortunate for Sims that his first three patients, Anarcha, Betsy and Lucy, were negro slaves, who by heredity and environment made ideal subjects for experimental studies such as he carried out on them for four long discouraging years. Sims performed thirty operations without an anesthetic on Anarcha alone before she was cured. Livingston maintained that the negroes in their native Africa stood pain better and endured punishment of all kinds with greater fortitude than civilized people; and Rudolph Matas, Hunter McGuire and other surgeons have stated that the American negroes were stoics in standing pain and that they made better surgical subjects than the whites. The training as slaves made Anarcha, Betsy and Lucy submit without question to the commands from their masters to allow Dr. Sims to perform any necessary operations; and the hope of relief from the

dreadful conditions resulting from vesicovaginal fistulae, no doubt made them willing subjects for experimentation.

Sims relates that Anarcha, Betsy and Lucy had kind masters; and no doubt Sims treated them with as much consideration as he did his patients the Duchess of Hamilton, the Empress Eugenie of France and the Empress of Austria. Sims maintained these three slaves in his hospital and treated them for four years without pay or hope of reward, other than the satisfaction of curing them of the most dreadful condition known to woman, and the hope that he might find the way to relieve others. Never in history has there been another instance of such devotion to duty and the cause of science. Anarcha, Lucy and Betsy should be immortalized as the first heroines in the story of the development of modern gynecology; just as Jane Todd Crawford in the pioneer days of Kentucky will be revered always in the memory of men and women along with Ephraim McDowell, the founder of abdominal surgery.

Life in Montgomery. Sims enjoyed the social life, as well as the practice of medicine, in Montgomery. He said of the period from 1845 to 1850: "I am perfectly satisfied and have nothing in this world to desire. I am happy in my home, in my wife and children, in my friends, in my position, in my prospects for the future. I am perfectly content, and nothing could induce me to leave Montgomery. I have no ungratified ambition or desire."

He probably would have remained in Montgomery for the rest of his life had he not developed a severe and intractable form of diarrhea (probably amebic dysentery), about six weeks after his successful operations on Anarcha, Betsy and Lucy. This form of diarrhea was epidemic in Montgomery at the time, and Sims states that every person who had it died. He gave himself up to die several times from July, 1849, to 1853. During these four years he made prolonged stays at various springs, mineral wells, and in New York, Philadelphia and New England. He finally recovered while in New York and decided to remain there to practice his profession.

Montgomery's Appreciation of Sims. Sims visited Montgomery in 1877, when he was accorded all the courtesies and honors that could be bestowed upon a man by his friends and the fellow members of his profession. Perhaps no finer tribute was ever paid Sims than by his former confrere, W. O. Baldwin, distinguished physician and former president of the American Medical Association.

Dr. L. L. Hill, of Montgomery, a student of Lister's in the early days of his use of asepsis and antisepsis in surgery, and now one of

the Nestors of the medical profession in Alabama, paraphrasing Dr. Weir Mitchell's statement that "Benjamin Franklin came from Boston but was born in Philadelphia at the age of seventeen," said: "Marion Sims came from South Carolina but he was born in Alabama, in 1835, at the age of twenty-two years."

In 1930, the Montgomery County Medical Society placed a bronze tablet on the wall of the building in which Sims had his office, and the address of Dr. Clarence Weil, then President of the Montgomery County Medical Society, was a fitting tribute to the memory of America's greatest surgeon.

It is true that Alabama has not built great memorials to Marion Sims but her sons and daughters will always regard him as an Alabamian, whose name and fame will be enshrined in the temples of their hearts until the end of time.

Marion Sims, the New York Surgeon

A wife's devotion. The wife of a genius, however brilliant she may be, and though she may have been a great factor in the success of her husband, is usually submerged in the story of his life. The devotion of Sims to his wife as shown in his letters to her at various times and his references to her in his autobiography, prove her the exception to the rule of the unrevealed wife of a man of great achievements. Sims gives his wife credit for deciding wisely at times when his own judgment was faulty. It is entirely probable that if Mrs. Sims had not been a woman of fine courage, sound judgment and great devotion to her husband, Marion Sims never would have located in New York to practice his profession.

Sims after four years of illness, probably amebic dysentery, and after a dozen of his friends in Montgomery had died of the same disease, had given up hope of living. Mrs. Sims decided over her husband's protest that the family should leave Montgomery and move to New York. She sold out his property and arranged for their dozen slaves to select their masters—she "would not put any of them in slavery against their will." Two weeks later (May, 1853) they were on their way to New York to live. Sims said, "I was so near dead that no one thought I would ever get to New York." After visiting various springs without improvement Sims spent a part of the summer in Connecticut. By September he had sufficiently recovered to locate in New York. They bought a home, two-thirds on credit, and Mrs. Sims kept boarders until her husband could become established as a physician. Sims said of his financial conditions at that time, when his wife was the bread winner of the family: "Mine is not an isolated example of a man's living

in a first class house, with a first class surroundings, and yet struggling with the most abject want."

Attitude of New York Confreres. Sims was not unknown to the medical profession in New York. His article on the treatment of vesicovaginal fistula had been published a year before in the American Journal of Medical Sciences; but it was read in skepticism and no surgeon in New York had performed the operation before Sims' arrival in the fall of 1853.

Soon after his arrival in New York, Sims called upon the leading surgeons in the city. They were courteous to him and he gladly outlined the technic of his operation for vesicovaginal fistula. He operated successfully upon one case for a distinguished surgeon; and the surgeon borrowed Sims' instruments to operate upon his next case. Soon the surgeons of New York were operating upon vesicovaginal fistula and giving Sims scant credit for perfecting the operation. Finding that there was no opportunity for him to operate in the New York hospitals then in existence and believing in the need for a hospital devoted to the treatment of diseases of women, Sims, without friends and without influence undertook the establishment of the Woman's Hospital. He found leading surgeons in the city divided into hostile camps, the lines of cleavage being the faculties of the three medical schools in New York at that time. None of them seemed to want to help Sims and some were openly antagonistic to his venture; so that Sims was compelled to appeal to the rank and file of the profession and to seek aid from philanthropic women.

Founding the Woman's Hospital. Sims was denied the opportunity of discussing his plans for a woman's hospital before any organized group of doctors, but a layman, Henri L. Stuart, rented Stuyvesant Hall and sent out 700 invitations to the doctors of New York City to hear Sims outline his plans for the proposed Woman's Hospital. About 250 physicians, including some of the leaders who had been antagonistic to Sims, attended the meeting. No one introduced Sims to the gathering, but after his address of half an hour in which he called attention to the needs for a woman's hospital, and outlined plans for securing the needed funds, Dr. Griscom called Dr. Edward Delafield to the chair. A number of voluntary speeches were made, resolutions were passed commending the movement, and a committee was appointed to carry out plans for establishing the first hospital for women in New York City. This committee consisted of Dr. Delafield as Chairman, Dr. Sims, Dr. Stevens, President of the College of Physicians and Surgeons, Dr. Green, President of the New York Medical School, and Dr. Mott

of New York University, and Dr. French representing the obstetric branch of the profession.

The lay press endorsed the movement for the establishment of a woman's hospital, and a committee of prominent women consisting of Mrs. Dodge, Mrs. Doremus, Mrs. Astor, and a number of others, became very much interested in the project, though some of the physicians' committees endeavored to discourage them, saying that New York City already had enough hospitals. Sims gives credit to the charitable women of New York for the establishment and maintenance of the Woman's Hospital which opened in May, 1855. Sims said: "The Woman's Hospital from the day it opened had no friends among the leaders—among hospital men. I was called a quack and a humbug, and the hospital pronounced a fraud. Still it went on with its work. Its wards were open to any doctor that cared to come, and the operations performed there were seen by most of the leading medical men in the city, and many others from different parts of the country."

The Successful Surgeon. With the opening of the hospital Sims' private work increased rapidly; and he soon became the leading surgeon of New York City. It is said that Sims commanded large fees from his wealthy clientele and that he received a large income from his practice; but no poor person was ever turned away by Sims, and a large portion of his time was always devoted to the surgery of indigent, afflicted women. Sims was never invited to a professorship in one of the New York medical schools; but all students of the three medical schools were frequent visitors to the amphitheater in which Sims operated; and the Woman's Hospital grew to such an extent that it was chartered and endowed by the State of New York and moved in 1858 to occupy a block at Lexington and 49th Street, granted it by the City of New York. It there grew to a hospital of 250 beds.

Sims' health continued good, and since he had begun to be affluent, and needed a rest, he decided to visit Europe for the first time in 1861 and there he lived most of the time until 1872. Sims returned for a brief visit to New York in 1862 for the purpose of taking his family to Paris to remain until after the Civil War ended.

He resumed practice in New York City in 1872 when he was again made a member of the Board of Surgeons of the Woman's Hospital. His popularity grew to such an extent that there was always a large number of surgeons present when Sims operated at the Woman's Hospital; and the amphitheater had few spectators when other members of the staff were operating. Then a rule was invoked limiting the number of spectators to 15 at any operation,

whereupon Sims, "whose delicate appreciation of the proprieties of professional life revolted at the arrogance of such an assumed censorship, tendered his resignation, no doubt more in sorrow than in anger." Thus the envy and jealousy of his confreres caused Sims to sever his connections with the hospital, which he had founded and for the success of which he was largely responsible; but the names of the ungracious and ungrateful surgeons who tried to humble a great man long since have been forgotten, while Sims belongs to the immortals.

Two years later, in 1876, the American Medical Association elected Sims President. He was also accorded many other honors by the medical profession including the presidency of the American Gynecological Society and Jefferson University, Philadelphia, conferred the degree of Doctor of Laws upon Sims in 1881.

Last Days. Sims continued the practice of gynecology in New York City until 1881 when he had a severe attack of pneumonia from which he was slow in recuperating. He spent a year in Europe, returning in August, 1883. On November 12, he operated successfully on the wife of a prominent New Yorker, and at the end of the day at the age of 70 said: "This is one of the happiest days of my life." About eleven o'clock that night he died unexpectedly without a struggle, presumably of a heart attack. Thus by sudden death, which according to the ancient Romans, "is reserved for the favorites of the gods," the great surgeon and benefactor of mankind passed to his reward.

While Sims had a struggle to become established in New York City, and at times was harassed by ungracious competitors, never did any man receive more generous treatment than that accorded him by the public and by the rank and file of the medical profession of his adopted city. That he and his family were happy and secure in the friendship of the best and noblest people of New York City there can be no question. Certainly James Marion Sims was the greatest surgeon that ever lived in New York City. A half century after his death the physicians of America's metropolis point with pride to the Woman's Hospital as an enduring monument that until the end of time will commemorate the fame and the achievements of the "Father of Modern Gynecology."

Sims' Conquest of Europe

In Ireland, Scotland, and England. Nothing in history parallels the career of Marion Sims in the medical centers of Europe. In 1861 he went to Europe primarily for a period of rest, after seven years of arduous work in private practice in New York City and in

the successful promotion of the rapidly growing Woman's Hospital. He also desired to study hospital plans in Dublin, Edinburgh, London and Paris, with the idea of adopting tried and approved designs and methods in hospital construction in the proposed new building for the Woman's Hospital. In addition he hoped to profit from contact with the renowned surgeons in Great Britain and on the continent of Europe.

Sims first went to Dublin where for ten days he was dined, but not wined, because to the amazement of Irish physicians he did not touch alcoholic beverages of any kind. The Dublin surgeons knew of Sims' operation for vesicovaginal fistula but no one there had ever performed the operation. A case was found and Sims operated upon her successfully.

Sims seemed to profit by his visit to Scotland where he was entertained by the great Scotch surgeons, Syme in Edinburgh and Simpson in Aberdeen, though no case of vesicovaginal fistula could be found in Scotland for him to operate upon.

In London Sims received a hearty welcome, particularly from Spencer Wells and Henry Savage, then the leading English surgeons. He was invited to operate on a case of vesicovaginal fistula in the Samaritan Hospital. The case was a difficult one and the patient died five or six days later. Sims, equally willing to report his mistakes and successes, relates that "the postmortem revealed the fact that the ureters had been closed by the suture, and death resulted from kidney complications."

In France and Belgium. In Paris Sims was received with great courtesy by the most distinguished French surgeons of the time. No case of vesicovaginal fistula had ever been cured in France, though several French surgeons had operated upon cases without success. Dr. Hugeier of the Beaujou Hospital was the first to invite him to operate but Nelaton and a number of other surgeons were present at the operation. At the end of a week the patient was cured, to the great surprise of the French surgeons who regarded the vesicovaginal fistula as an incurable condition.

A few days later, Vernier invited him to operate on a case in St. Louis Hospital. When this case was cured at the end of a week it created a regular furor in Paris hospital circles. Then cases of vesicovaginal fistulae were found for him to operate upon by Loquier at Hotel Dieu and Velpeau at La Charite, and all were completely cured. Soon after these successful operations Dr. Eranbaix, surgeon to King Leopold of Belgium, visited Paris and invited Sims to go to Brussels to operate on several patients. The medical profession of Brussels gave Sims a banquet, elected him a Fellow of

the Royal Academy of Medicine, and recommended his name to the Government for the Legion of Honor of Belgium. The latter honor was not conferred upon Sims at the time because the American Minister to Belgium, whose name has long since been forgotten, objected because of Sims' well known sympathy to the South. A number of years after the War between the States (1880) Sims was belatedly elected to the Belgian Legion of Honor.

Sims' reputation as a gynecologist soon brought him cases from all over France; and he was called in consultation by Prussian surgeons or invited to operate upon their cases. In a few months his income was such that he went to New York to bring his family to live in Paris at least until after the Civil War.

Sims' Book on Uterine Surgery. In 1863, through Sir Joseph Olliffe, Sims became physician to the Duchess of Hamilton of Scotland. She was then very ill and she requested Sims to accompany her to Baden-Baden. There she provided for him a beautiful chateau in which to live for the summer. Having much spare time he wrote his book on "Uterine Surgery." It was published simultaneously in English, French and German and it created a sensation in medical circles all over the civilized world. It was the most widely read treatise on any medical or surgical subject for a generation.

The methods advocated by Sims in his book were radical and so different from those in vogue at the time that many physicians did not at first accept his teachings, but in a few years it completely revolutionized the practice of gynecology. When Sims' "Uterine Surgery" was published there was not a professorship of gynecology worthy of the name. In a few years every medical school of importance in the world established departments of gynecology; and Sims' book on "Uterine Surgery" was the textbook used by medical students and gynecologic surgeons everywhere.

Physician to Empress Eugenie. In April, 1863, Sims was engaged by the Emperor Napoleon III of France to treat the Empress Eugenie. He was a guest for two weeks in the Emperor's summer palace at St. Cloud while treating Empress Eugenie. Sims did not in any of his writings divulge the character of her malady, but certain it is that the Emperor and all France were grateful to him for his services to Empress Eugenie. In recognition of Sims' distinguished ability and professional attainments the French government honored him by making him a Commander of the Legion of Honor.

Surgeon in Franco-Prussian War. That Sims appreciated his French benefactors is shown by the fact that during the Franco-Prussian War in 1870, he aided in organizing the Anglo-American

Ambulance Corps, of which he was Surgeon-in-Chief. Sims arrived at Sedan the day before the battle and was placed in charge of a 400 bed hospital. There he had the opportunity of treating many wounded soldiers both French and Prussian. Sims, a great surgeon, profited by his experience in the Franco-Prussian War, and the rules for surgical management of gun shot wounds of the abdomen which he then promulgated have not been improved upon in more than half a century.

In October, 1881, in an address before the New York Academy of Medicine, entitled "The Careful Aseptic Invasion of the Peritoneal Cavity for the Arrest of Hemorrhages, the Suture of Intestinal Wounds, and the Cleansing of the Peritoneal Cavity and for All Intra-Peritoneal Conditions," he advocated: "(1) the wound of entrance should be enlarged sufficient for a thorough inspection; (2) injuries should be sutured and bleeding vessels ligated; (3) a search for extravasated matter and cleansing of the cavity; and (4) the surgeon must judge the advisability of drainage."

When the Prussian victory at Sedan ended the war and the work of the hospital of which Sims was Surgeon-in-Chief was completed, after more than a month, Sims returned to Paris. A year later he sailed for New York to resume his practice in America.

European Honors. Sims' English admirers, including a number of the leading physicians in London, prevailed upon him to locate in London, where he was called to operate upon patients at various times during his 10 years stay in Europe, but he chose to make Paris his home while abroad. However, he visited and operated upon patients in many European countries. Dr. J. M. Toner, in his biography of Sims, states that the Empress of Austria was one of his patients.

The European Governments vied with each other in honoring Sims. France made him a Commander of the Legion of Honor; Spain, a Knight of the Order of Isabella; Belgium, a Knight of the Order of Leopold; and Germany gave him the Iron Cross, while Italy conferred two medals upon him. He was also made an honorary member, or fellow, of many medical societies in European cities, including some of the leading medical organizations in London, Edinburgh and Dublin. That Marion Sims has not been forgotten in Europe is shown by a recent experience of Dr. George Gray Ward, Gynecologist to the Woman's Hospital in New York. While visiting in Budapest, Hungary's great medical center, Dr. Ward was conducted through the University Hospital by the Professor of Gynecology, who pointed proudly to the name over one of the wards which had been dedicated to Marion Sims.

Sims' peaceful conquest of Europe may be compared with the continental military victories of Napoleon, though the lives of the two men were different and divergent. One was a soldier of fortune making weird and devilish music with his sword, bidding Europe dance to the measure, yet loving France as none before or since; the other was a simple child of genius, an apostle of a new dispensation in medicine, and a benefactor of the first magnitude. Napoleon's fame and vain conquests were accomplished at the cost of carrying death and desolation over a continent, making millions mourn; while Marion Sims' discoveries brought health and happiness into millions of homes, and will rest like a benediction upon the suffering mothers in all civilized nations, when wars and warriors, with the fearful ruin they have wrought, have been forgotten. Verily, "peace hath its victories more potent than war."

Sims' Place in History

Sims' was a rare and remarkable experience. The pioneer in knowledge and discovery not infrequently sees his work purloined and exploited by others. He entered into the inheritance of his own genius and lived to see himself fixed in a solid niche in the Temple of Fame as the "fons et origo" of scientific gynecology. He knew that his name and achievements were as permanently linked with gynecology as was Pericles' with the golden age, or Morse with electricity. Then he showed the world the beauty and sweetness of his nature in that, like the Master, he saw "the travail of his soul and was satisfied," without being vain.

One has but to think for a moment of the vast good to humanity that Sims' discoveries have wrought, to place him as one of the greatest benefactors to mankind in the history of the world. The illustrious gynecologist, Dr. T. Gaillard Thomas, of New York, said: "If I were called upon to name the three greatest men, who in all history had most benefited mankind, I would say, Edward Jenner, George Washington and Marion Sims."

Dr. George Gray Ward, Professor Emeritus of Obstetrics and Gynecology in Cornell University, in an address on "Marion Sims and Modern Gynecology" before the New York Academy of Medicine in 1935, relates that at the dedicatory exercises opening the new operating theatre in the present Woman's Hospital in 1922, Dr. Henry C. Coe thrilled the audience with a reminiscence of Sims addressing the medical students at Harvard University a short time before his death. Coe closed his remarks by saying: "What lecturer before or since could hold a class of restless students for two hours? He bowed to us, the door opened and he passed from

our mortal vision forever. You remember when we used to read in Virgil and Homer how the Gods assumed the shapes of men and came down to talk to mortals. Their divinity was recognized only as they departed. So, in a dim way we felt as the door closed, that we had met face to face one who was endowed with the genius which made him one of the Immortals."

It is no discredit to the memory of other great men whose achievements have added luster to the history of medicine to say that Marion Sims is the brightest star that shines in the firmament of America's brilliant and distinguished surgeons, because he is known throughout the world as the greatest man that our nation has ever given to medicine. The lives of Sims and other Nestors of the medical profession in America, should constantly be held up before students and practitioners of medicine and surgery, as examples worthy of their emulation. Marion Sims' place in history is beside Louis Pasteur, Lord Lister, Ephraim McDowell, Crawford W. Long, Walter Reed, William Crawford Gorgas and other illustrious pioneers in medicine, who have joined

> The choir invisible
> Of those immortal dead who live again
> In minds made better by their presence, live
> In pulses stirred to generosity,
> In deeds of daring rectitude, in scorn
> For miserable aims that end with self,
> In thoughts sublime that pierce the night like stars
> And with their mild persistence, urge men's search
> To vaster issues.

Author's Note: The preparation of this biographical sketch of one of the heroes of my youth, as well as of my mature manhood, has been a joyful task, imposed upon me by the request of the Editor of THE SOUTHERN SURGEON. My father, Dr. Charles Hooks Harris of Cedartown, Ga.—originally from Tuskegee, Ala.—was a medical student at the University of New York in 1855-1857 when Sims' operating room in the Woman's Hospital was the mecca for the medical students of New York City and the physicians of the United States. Sims was my father's ideal of a surgeon and as a man, and his well-worn copy of Sims' "Uterine Surgery" is today one of my cherished possessions. As a boy of sixteen I read my father's copy of Sims' "Autobiography" and recently have re-read twice the highly prized copy—the book has been out of print for many years—presented to Dr. Groce Harrison, Professor of Medical History of Vanderbilt University, by his friend, Dr. L. L. Hill, of Montgomery, Ala. The data used in the preparation of this article were derived largely from Sims' autobiography, his letters, and the addresses and biographical sketches, particularly those of Hon. T. J. Mackey, and Dr. J. M. Toner, of Washington, D. C., and Dr. William Owen Baldwin, Montgomery, Alabama, in the posthumous publication of "The Story of My Life" by Sims' son, Dr. H. Marion Sims of New York. Addresses by Dr. L. L. Hill and Dr. Clarence Weil of Montgomery and the beautiful and classical address on Sims by Dr. Irvin Abell, Louisville, Kentucky, when President of the Southern Medical Association, provided some of the material used in the preparation of this article. I am also indebted to Dr. George Gray Ward, Gynecologist to the Woman's Hospital, in New York, for data derived from recent addresses on Sims. A number of paragraphs are excerpts from my "Orator's Address" delivered before the Medical Association of the State of Alabama at Montgomery, April 20, 1905.—S. H.

OSTEOMYELITIS OF THE SKULL

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THE skull is not as commonly invaded by pyogenic organisms as some of the other bones in the body, yet osteomyelitis of the skull is far more frequent than is generally recognized. A review of the literature does not support the latter part of this statement. There are many individual case reports, the majority of which are to be found in the otolaryngologic journals, but the recording of the problems that have confronted the general or neurologic surgeon has been somewhat neglected. This can not be because of the results, for certainly the treatment of these cases has been gratifying and may be listed along with other surgical triumphs. Already from a limited experience, the early complete excision of infected skull has repeatedly demonstrated the value of radical surgical efforts. The involved etiologic factors themselves, omitting the specific causative organisms, offer sufficient subject matter for the basis of a thesis. These etiologic influences are usually easily established in a carefully developed history. In lieu of a number of detailed facts concerning the development, course, treatment and results, individual case reports of variable etiologic background will be given, illustrating the problems and management of these cases. It is hoped that these illustrative cases will serve to prompt earlier recognition of osteomyelitis of the skull, thus permitting earlier treatment and preventing sequelae and complications which in themselves are more dangerous than the primary disease.

CASE 1.—*Osteomyelitis of the left frontal bone, secondary to a frontal sinus infection. Radical excision of all diseased bone. Cured.*

History: A boy, aged 15 years, referred by Dr. Francis F. Belcher, of Monticello, Ga., entered the Piedmont Hospital on Oct. 30, 1930. Six weeks before a frontal sinus infection had been drained with some relief from pain. Two weeks later a radical frontal sinus operation had been performed. X-ray studies of the infected sinus revealed necrosis of the adjacent frontal bone. Following the sinus operation the patient was referred for treatment.

Examination: Neurologic examination was negative. Over the right eyebrow there was a 3 cm. linear scar which had not completely healed. There was a small draining sinus in the upper margin of the right eyelid. The involved frontal bone is depicted in Figure 1.

Treatment and Course: On October 31, all diseased bone was rongeured away. On December 20, the patient was discharged from the hospital. The wound had healed by secondary intention. Figure 2 shows the bone defect after operation.

Read before the Seventh Annual Assembly of The Southeastern Surgical Congress, in New Orleans, March 9, 10 and 11, 1936.

This first case represents one of the most common types of skull infection encountered, namely, an osteomyelitis complicating a sinus infection. Before sketching the historical background of this subject there are several facts in reference to this first case that are worthy of mention. Only six weeks had elapsed from the onset of the sinus infection until a radical skull excision was carried out. The early recognition of the disease permitted a minimal sacrifice of bone. The infectious process had not progressed sufficiently to affect ma-

Fig. 1. Case 1. Osteomyelitis of frontal bone, secondary to a frontal sinus infection.

terially the patient's general health thus permitting a surgical latitude attended by little risk. Certainly in some cases the intracranial involvement must develop along with the bony disease. On the other hand complications do arise when the disease in the skull goes untreated. This first case illustrates the results following radical efforts in a simple case and is offered for comparison with the subsequent cases where longer periods of time elapsed before the diagnosis was established and proper treatment instigated.

Osteomyelitis of the skull is no new subject but the scarcity of literature would lead one to believe that it is a rare condition. Hippocrates called attention to skull diseases arising from infected

scalp wounds. After Percival Pott's description, in 1778, of local skull necrosis resulting from compounded skull injuries, focal skull infection without an opened scalp became known as "Pott's puffy tumor." In 1923 Fleming[1] brought out the more salient facts concerning the development of infection in the skull bones. His case reports are primarily those of traumatic origin. He stressed that the disease was much more common than was generally recognized and also emphasized that the course of the disease might be long drawn out before any localization was evident.

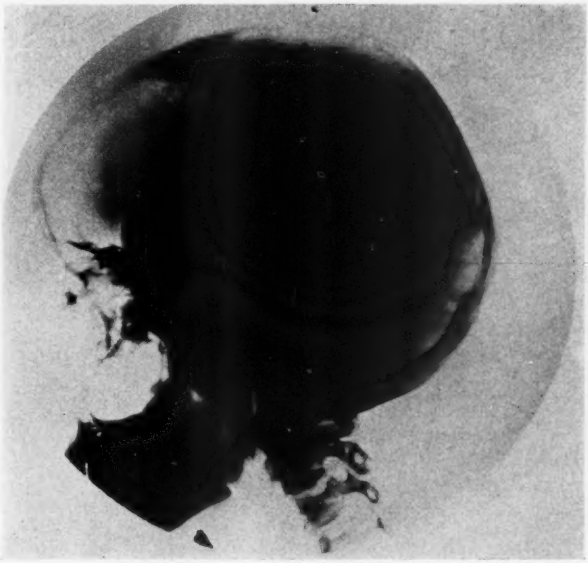

Fig. 2. Case 1. Illustrating the bone defect after radical excision.

In 1930 Woodward[2] reported an osteomyelitis of the skull secondary to frontal sinus infections. He stressed the necessity for bacteriologic studies in these cases and in that the majority of the organism was *Staphylococcus pyogenes aureus,* he felt that the treatment might well be standardized. In 1933 Adson[3] emphasized the necessity of radical efforts in the surgical management of these cases. In this same year Adelstein and Courville,[4] offering a classification, discussed the anatomic facts and mode of entrance of the organisms as influencing the course of the disease. They concluded that conservative surgical intervention was preferable in the treatment of osteomyelitis of the skull but that radical efforts might be necessary for the sequelae or complications. They too based their studies on cases of traumatic origin. Listed among individual case

reports are innumerable cures following radical efforts. Other articles deal with the mode of spread and development of the infection. There are a few publications on the roentgenographic changes in the skull that follow pyogenic destruction. There are, however, no case reports of any therapeutic efforts utilizing the maggot treatment introduced by Baer in treating osteomyelitis of other bones.

CASE 2.—*Osteomyelitis of the right parietal bone subsequent to an injury. Radical excision of all infected bone. Secondary healing. Cured.*

History: A man, aged 29 years, referred by Dr. Earl Campbell, of Chattanooga, was admitted on Sept. 7, 1934. Three months before he had struck the right side of his head. He suffered considerable pain at the time of the injury and from then on he had continued to have pain in the right parietal area from time to time, with a tendency for the pain to radiate into the temporal region. Two months after the injury a swelling of the scalp developed in the painful area. When fluctuation was evident incision was done and the pus drainage gave relief. X-ray studies at this time revealed no bone destruction. Ten days after drainage, the scalp wound sealed and pain returned. The wound was reopened with little drainage but a roughening of the outer skull table was disclosed. X-ray studies at this time showed definite bone necrosis and patient was referred for treatment.

Examination: Neurologic examination was entirely negative. There was a small draining sinus in the right preparietal area, about which there was an edematous tender scalp. The cervical glands on the right side of the neck were swollen and tender. X-ray studies showed a mottled bony necrosis in the right parietal region over an area some 4 to 5 cm. in diameter.

Treatment and Course: On Sept. 8, 1934, through a crossed scalp incision, all of the diseased bone was removed. The wound healed by secondary intention and he was discharged from the hospital on Oct. 1, 1934. Until complete epithelialization his dressing was continued. Figure 3 is a photograph of the X-ray studies made three months after operation. There has been no further discomfort or evidence of bone disease.

The rapidity with which pyogenic destruction of the skull may progress must depend somewhat as do other infections upon the resistance of the individual as well as the virulence of the invading organisms. There are, however, anatomic facts responsible for the frequency with which certain bones of the skull are affected in preference to others. These responsible anatomic facts are primarily the location of the accessory nasal sinuses and the vascularity of the individual bones that make up the skull. Another influencing factor in the spread of the bone disease is the presence of periosteal partitions between the individual bones of the skull. These are present in children but with age the sutures become firmly knitted and the skull may be considered as one large flat bone. With these facts in mind it is easy to understand the frequency of frontal bone infection. The temporal bone, as may be reasoned, is the second most common site for the appearance of osteomyelitis of the skull, with

the occipital bone the least susceptible. In those cases that develop from or as a part of an accessory sinus infection the rapidity of spread is greater and usually more rapid than in those instances developing from compounded skull injuries. In cases where the skull invasion is a development in a systemic bacterial disease the necrosis, as might be anticipated, is more patchy, extensive and rapid than in those rare instances where the skull bones are involved in the course of osteomyelitic infections elsewhere in the body. In

Fig. 3. Case 2. The bony necrosis before this complete excision was of a diffuse rather a circumscribed character.

these cases which develop skull infection from trauma with no scalp wound, as is illustrated in this last case, the involved bone may be fairly discrete, remaining as such, or the x-ray studies may depict multiple necrotic areas confined to a relatively small portion of the skull. As a group such bone destruction extends comparatively slowly in these cases.

CASE 3.—*Osteomyelitis of the vertex of the skull of 39 years' duration, secondary to a third degree scalp burn. Possible carcinoma of scalp. Radical excision of scalp and skull. Skin grafts. Cured.*

History: A woman, aged 40, entered the Albert Steiner Clinic on July 28, 1933. At one year of age she had suffered a third degree burn of the scalp.

There was never a complete healing in the vertex region. The diseased area would epithelialize over, break down, drain pus for a period of time and seal over again. At the time of admission there had been some drainage for two years. Headaches had occurred frequently through the 39 years but had been constant and of increasing intensity for three months before entering the hospital.

Examination: There were no positive neurologic findings. The entire scalp vault was scar tissue devoid of hair. In the center of the scar (Fig. 4) was a small granulating wound beneath which frank pulsations were visible. Pus could be freely expressed from beneath the scalp. The zone about the granulating area was extremely tender.

Fig. 4. Case 3. This granulating draining sinus was of 39 years' duration. The dura is visible in the center of the sinus.

Treatment and Course: Biopsy was made from the edge of the granulating area but was negative for any evidence of malignancy. On Aug. 15, 1933, a wide excision of the scalp and underlying bone was carried out. By September 2, granulation was complete and Dr. Calvin Stewart did a Thiersch skin graft. This was completed by the 14th and she was dismissed from the hospital on October 10, with a completely healed wound and no evidence of any further bone disease on x-ray examination (Figs. 5 & 6).

Osteomyelitis of the skull developing with or resulting from gross scalp destruction comprises a relatively small group. The disease develops in the skull as a result of diminished vascularity plus the accessibility to external invasion by pyogenic organisms. In that the tissue

is of low vitality the spread of the disease may sometimes be rapid and extensive. This particular patient had had a low grade infection over a period of 39 years and the question of a possible skin cancer was considered. It was this possibility that prompted such extensive sacrifice of bone and scalp. Such extreme efforts are rightfully open to criticism. The scalp was no more than thinned, scaly, scar tissue for a distance of 2.5 to 3 cm. about the draining sinus. It was feared that a feeble sacrifice of bone might carry infection into already

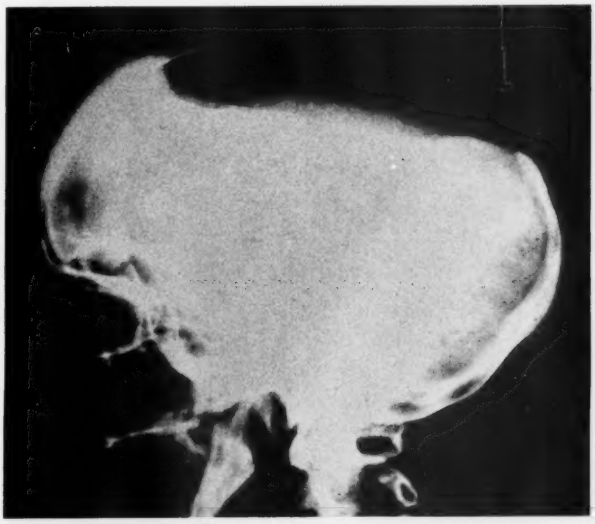

Fig. 5. Case 3. Illustrating an extensive bony sacrifice. Note the smoothed edges of the skull about the defect.

none too healthy tissues, and the scalp and skull therefore were removed without invading the infected zone after surgical preparation of the operative field. Usually where the scalp has been destroyed or by necessity sacrificed leaving exposed bone, one has no fears over secondary healing. This may be accomplished by multiple trephine openings of the outer skull table, but in this case some misgivings were entertained as to the development of granulations over such a large area of exposed dura. Within a month such fears were dispelled and skin grafting was begun. In this group such extensive bony removal as was carried out in this case is not indicated and most often a destruction of the immediately infected bone will be all that is necessary for secondary healing.

CASE 4.—*Osteomyelitis of the right frontal bone, secondary to a frontal sinus infection. Frontal lobe abscess. Radical excision of diseased skull. Drainage of abscess. Cured.*

History: A girl, aged 13 years, referred by Dr. W. T. Pace, of Smyrna, Ga., entered the Piedmont Hospital Nov. 17, 1930. Four months before there had developed an edema of both eyelids with some swelling in the right supra-orbital region. Incision and drainage in this frontal area had relieved the pain and swelling but drainage continued and the headaches persisted. Three and one-half months after the onset she began to have generalized convulsions on an average of three attacks each day. Diplopia was complained of from three weeks after onset of headaches. Three weeks before hospital admission a small fragment of bone was removed from the draining sinus.

Fig. 6. Case 3. Even though the vault of the skull has been sacrificed the contour of the head is maintained.

Examination: The positive neurologic findings were: bilaterally choked discs, a complete right internal strabismus, a left facial weakness (central type), and a weakness of the left hand grip. In the right frontal region there were three areas; one granulating wound (2 by .5 cm.) discharging pus, just to the right of the midline and about 4 cm. above the eyebrow; a second area (2.5 by .5 cm.) about 5 cm. above the first area; and a third healed scar 2 cm. above the outer angle of the right eye. This entire frontal area was edematous and tender to palpation. X-ray studies of the involved skull are depicted in Figure 7.

Treatment and Course: On November 19, all diseased bone was completely removed and the "stalk" of the underlying abscess exposed. Immediate drainage was carried out. She was dismissed from the hospital December 23, and one month later the wound had completely healed. Figure 8 was

made three months after hospital dismissal. There has been no subseuqent evidence of any infection.

This case illustrates one of the more serious complications or conditions that may develop from or along with an osteomyelitis of the skull. It is not my purpose to discuss the diagnosis and management of brain abscesses but this case calls attention to one of the possibilities encountered in the surgical management of skull infec-

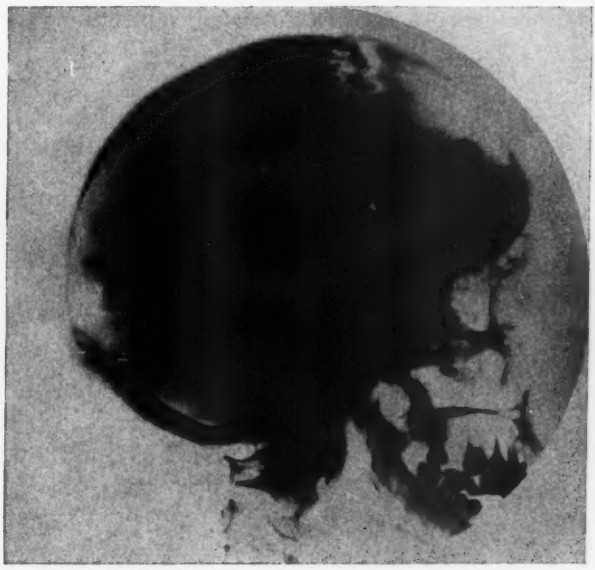

Fig. 7. Case 4. In younger people the periosteal partitions between the individual skull bones seem to act as a check upon the spread of the skull disease.

tions. Faced with such potentialities, every case in which the diagnosis of osteomyelitis of the skull has been established should have a careful neurologic examination. From such examination such laboratory aid as may be necessary can be estimated. In those cases in which the infection is blood borne, blood cultures should be carefully carried out. Lumbar puncture is only indicated where there is suggestive or definite evidence of intracranial complications. Not always are the neurologic findings frank evidence of cerebral invasion. At times a frank epidural collection of pus may be the factor in producing localizing neurologic symptoms. Such a collection of pus beneath the skull and outside the dura may give a very definite clinical picture of brain abscess. Occasionally a subdural collection of pus may be encountered in those cases where the clinical picture is suggestive of an abscess. The possibilities of a meningitis develop-

ing in these cases is easily understood. The dura is a strong barrier against infectious invasion and will resist such for a long period of time, but once broken through all the serious and dangerous complications may ensue. In that the bone infection in a majority of cases enters the skull through the small emissary veins, and in a still greater number progresses through the diploetic vessels which drain into the larger cerebral venous sinuses, it is evident that sinus thrombosis might easily be a common complication. With such dangerous complications as brain abscesses, sinus thromboses, men-

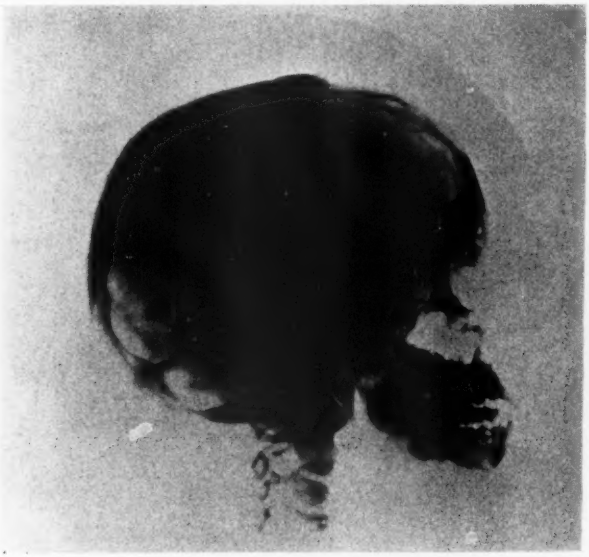

Fig. 8. Case 4. The postoperative bone defect three months after hospital dismissal.

ingitis, etc., there should be no hesitancy in carrying out radical efforts as soon as the diagnosis is made, and with earlier recognition there must be certain cases in which the bone disease can be eradicated before such complications have begun. The recognition of such serious complications seems to justify the statement that the disease itself is a simple one.

CASE 5.—*Osteomyelitis of right parietal bone of 15 years' (?) duration secondary to trauma. Radical excision. Improvement. Subsequent course with autopsy findings.*

History: A man, 42 years old, referred by Dr. W. A. Smith, of Atlanta, entered the Piedmont Hospital Oct. 21, 1932. For fifteen years he had had attacks of right parietal pain at rather regular intervals. These followed an injury in the right parietal area at which time he was rendered unconscious,

sustained a scalp laceration, and was told his skull was fractured. For three years these attacks of headache had been more frequent and more severe. About one month before admission a swelling developed in the right parietal area, was drained, and skull plates were made (Fig. 9). On October 19, there had suddenly developed a weakness of the left leg and within twenty-four hours a complete hemiplegia had developed. Along with the hemiplegia the patient noticed a loss of sensation and a disturbance of vision.

Examination: The positive neurologic findings were: a complete left hemiplegia, a right homonymous hemianopsia, a hypesthesia of the entire left side of the body to light touch and pin prick, an absence of the left superficial

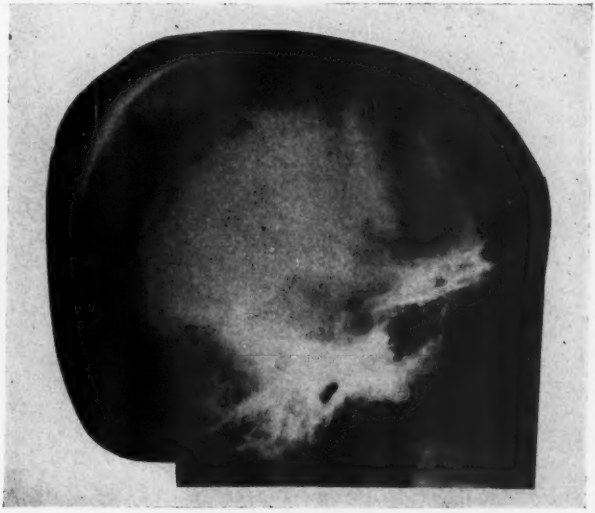

Fig. 9. Case 5. Illustrating the bony changes in chronic osteomyelitis of the skull.

reflexes, a hyperactivity of all left deep reflexes, with a positive Babinski and ankle clonus on this side. There was a draining wound in the right parieto-occipital area, about the edges of which there was a zone of edema which was extremely tender to palpation.

Treatment and Course: On Oct. 21, 1932, as an emergency procedure, all diseased bone was removed. The pathologic dura prompted subdural exploration. A massive subdural abscess was drained and an evident meningitis was disclosed. Free subdural drainage was instituted. On Oct. 29, 1932, his temperature had become normal and the hemiplegia had markedly improved. On November 4, the patient was dismissed from the hospital without any evident paralysis, visual field defects or sensory changes. The wound was dressed as often as necessary. On Jan. 10, 1933, he began to complain of some sensory changes in the left leg, and some associated subjective weakness. Hospitalization was advised but for economic reasons he went to a United States Veterans' Institution. Upon arrival on January 15, he was in a coma, although he had left home thirty-six hours before conscious and able to support his own weight. His serious condition prevented any radical efforts, and within a few

days he died. Autopsy revealed an "abscess, the size of a tennis ball, occupying the right parieto-occipital region."

This case illustrates the insidiousness with which osteomyelitis may develop in some instances. It further represents an experience that has received no attention, namely, that osteomyelitis of the skull may, with its complications, become a surgical emergency. There is no way of proving in this man's case that the infection was present fifteen years, but x-ray studies made at the time the scalp

Fig. 10. Case 6. Illustrating the extensiveness of bony involvement that may occur where no efforts to eradicate the disease are undertaken.

swelling appeared do testify to the fact that the skull disease had been present longer than one month before the appearance of any neurologic symptoms. It is well to bear in mind that in patients who complain of persistent localized pain in the head, and who give a definite history of a head injury, the exclusion of bone necrosis can only be made after careful roentgenologic studies. To say that some cases are surgical emergencies is likely to be misleading and some clarification is warranted. It is best to say that most of the cases are emergencies but there are some cases in which the possibilities of acutely developing intracranial pressure demand immediate surgical attention. The definite neurologic findings in the absence of an epidural abscess, if the dural disease alone had not been

so evident, made subdural inspection imperative. This case is an illustration of what at one time was known as Pott's puffy tumor, namely, an osteomyelitis developing after trauma. There was a history of a scalp laceration fifteen years before. Such developments following trauma are rather uncommon. A sufficient number of similar cases following focal injury without scalp wounds have occurred, as with osteomyelitis in other bones, as to dispel any doubts

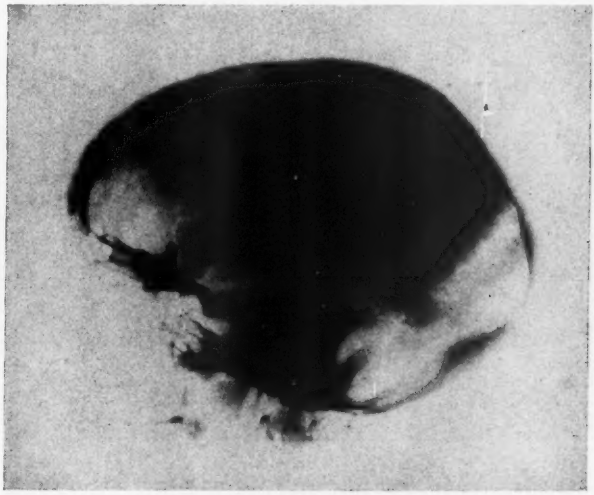

Fig. 11. Case 6. This x-ray plate was made twenty months after Figure 10. Note the clearance of the disease in every part of the skull except the frontal areas.

about the injury being a mere coincidence. It is unquestionably the result of organisms invading tissues in which the resistance has been lowered by the bruise.

CASE 6.—*Osteomyelitis of the entire skull secondary to a mastoid operation. No operation. Spontaneous healing.*

History: A woman, aged 25 years, entered Emory University Hospital July 13, 1933. Six months before an otitis media developed followed by a mastoid infection. A mastoidectomy was done and shortly afterward a second mastoid operation was performed. She was told at this time there was a definite skull infection and neurosurgical consultation was advised. Following the second mastoid operation she began to suffer intense unlocalized pains in her head. At times ½ grain of morphine was necessary for relief. The patient had lost some 45 pounds in body weight over a period of four months.

Examination: There was a complete right facial nerve paralysis and complete deafness in the right ear. The entire scalp was edematous and pitted on pressure. Over the entire cranium, pressure produced excruciating pain. She was clinically anemic. X-ray studies of the skull are illustrated in Figure 10.

Treatment and Course: Morphia freely was necessary for relief of pain. A plan of treatment was outlined, directed mainly toward building up her general health, with the idea that as soon as her physical condition improved some conservative surgical efforts might be undertaken to rid her of the infection. Economic circumstances prevented prolonged hospitalization. In September, 1934, (20 months after the onset of her illness) she reported to the office for observation. She had used morphine freely for 6 months after leaving the

Fig. 12. Case 7. Illustrating the diffuse and widespread necrosis in a case of bacteremia.

hospital. With disappearance of pain she began to gain weight and noted some improvement in her facial paralysis. On examination there was frank improvement in her facial paralysis but there was complete bilateral deafness. There was no scalp edema and no areas of tenderness. Figure 11 shows the definite improvement of the diseased bone.

This case represents the extreme degree of development in osteomyelitis of the skull and answers one question as to what may happen if no complications develop. It also answers, at least for this case, what may happen if no surgical efforts are attempted. There have been recorded "spontaneous cures" in other skull cases, as well as in some of the infected long bones. It is not my purpose in using this case to advocate conservatism, for while the disease is disappearing there has been a complete loss of hearing. Had early radical efforts been carried out one might have anticipated a minimal bony sacrifice and prevented what now appears to be permanent deafness. Even though free from pain and with no clinical evidence of any infection there is still roentgenologically present frank bone disease. Her general health is such that if an outbreak recurs a possible eradication might now more safely be undertaken.

CASE 7.—*Osteomyelitis of the skull occurring as a part of a bacteriemic infection. Drainage. Recovery.*

History: A six-year-old boy entered Grady Hospital (Emory University Division) Sept. 26, 1933. One week before he had had a gastro-intestinal upset with an elevation in temperature. Two days before admission there was noted a swelling of the side of the face. During hospitalization he developed lobar pneumonia followed by an empyema, an osteomyelitis of the skull, and an osteomyelitis of the second metacarpal bone.

Fig. 13. Case 7. Note the complete disappearance of all suggestive bone disease fifteen months later.

Examination: On Oct. 5, 1933, there was a definite fluctuant painful scalp on the right side. Neurologic examination was entirely negative, as was the spinal fluid study. The child was critically ill. X-ray plates made at this time are shown in Figure 12.

Treatment and Course: On October 7, a 3 cm. incision was made in the scalp in the right parietal area and a rubber drain inserted. Hot wet dressings were used continuously. On October 17, a second drainage incision was made. From October 26 to November 24 his temperature chart was a septic one. After this there was a normal range for three weeks before his dismissal. Drainage had become minimal by December 7, and x-ray studies showed definite improvement in the bone necrosis. The patient was discharged from the hospital on December 16, and returned to the Out-Patient Department for an occasional dressing. X-ray pictures made Jan. 23, 1935 (Fig. 13) showed no evidence that there had ever been any bone disease.

This case represents another relatively small group. Occurring as a part of a generalized infection these patients are extremely poor surgical risks and, in that the osteomyelitis of the skull is not the primary focus, only conservative efforts are indicated.

CASE 8.—*Osteomyelitis of the occipital bone (left) secondary to a compound fracture of the skull. Radical excision of diseased bone. Healing by secondary intention.*

Fig. 14. Case 8. The bone defect is the result of the sacrifice of the fractured fragments at the time of the debridement. The small area of osteomyelitis is depicted along the anterior superior rim of the defect.

History: A boy, aged 5 years, entered Grady Hospital (Emory University Division) Dec. 14, 1935. A victim of an automobile accident, he had a compound depressed skull fracture. Upon arrival he had regained consciousness. There were no neurologic symptoms. A debridement was carried out and the scalp was closed without drainage. On the sixth day there was an elevated temperature and a swelling along the wound edges. On opening the wound there was a free escape of pus.

Examination: Neurologic examination was entirely normal. There was an open wound in the left occipito-parietal area 4 cm. in length. Pus was freely expressed from beneath the wound edges. The cervical glands were swollen and tender and the scalp about the wound was quite edematous. Roentgenograms depicting the diseased bone are shown in Figure 14.

Treatment and Course: On December 20, the scalp wound was opened its entire length, Dakin tubes were inserted and the wound kept open with gauze packs. Irrigation with Dakin's solution was continued for three weeks. Gross drainage subsided and on Feb. 8, 1936, a radical excision of all diseased bone was carried out. At present the wound is healing by secondary intention.

The management of these cases is primarily one of prevention, but once developed the earlier the diseased bone is eradicated the less likelihood there is of complications. Such preventive efforts as

Fig. 15. Case 9. The skull of an adult illustrating an invasion of the bone posterior to coronal suture line.

debridement have been advocated. It might not be amiss to be more specific as to what a debridement in head injuries entails. After preliminary shaving, sterilization and anesthetization of the wound the procedure is carried forward with every surgical care and precaution as in any craniotomy. The scalp edges are freshened, destroying all macerated or contused tissues. No attempt should be made to catch individual scalp arteries but by simply catching the galea and laying the forceps back across the scalp hemostasis is easily accomplished. If the surgical attempts are within the first six or eight hours and it is unnecessary to leave the dura opened, the bone fragments should be preserved in some antiseptic solution for replacement before closing the scalp without drainage. In instances where surgical attempts are not carried out within a twelve hour lapse of time following injury the replacement of bone

fragments is inadvisable. In a repaired compounded skull fracture when a scalp infection appears, wide open drainage should be immediately instituted and careful and persistent exclusion of an underlying bone infection established. Secondary scalp healing may occur but these cases bear close watching and x-ray studies until complete healing has occurred.

CASE 9.—*Extensive osteomyelitis of the skull secondary to a frontal sinus infection. Two-stage operation excising all infected bone. Skin graft. Cured.*

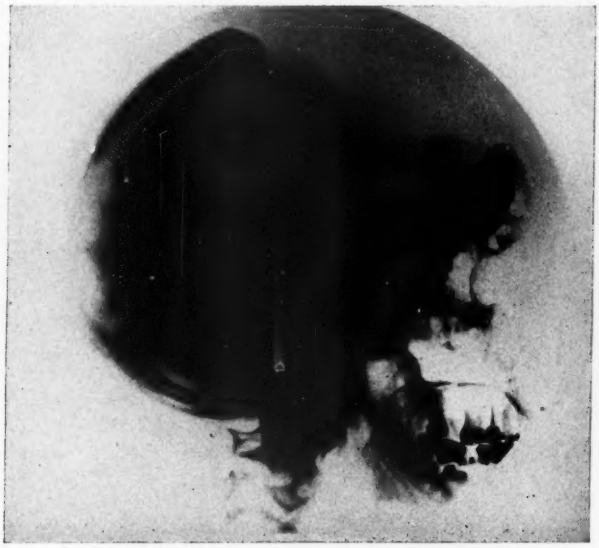

Fig. 16. Case 9. Illustrating the gross sacrifice of diseased skull at the first operation.

History: A man, aged 37 years, referred by Dr. Rufus Thames, of Milton, Fla., entered the Piedmont Hospital, Jan. 7, 1930. Five months before an abscessed tooth had been extracted, followed by a chill and rise in temperature. Four months before an antral drainage had been necessary and one month later a frontal sinus infection had developed. The frontal sinus was drained externally but frontal pain and tenderness had continued. X-ray studies revealed a necrosis of the frontal bone and the patient was referred for treatment.

Examination: Neurologic examination was entirely negative. There was a discharging wound in the left supraorbital region. There was a healed wound over the left frontal sinus. The entire forehead was extremely tender and there was an evident edema of this area. The x-ray findings are illustrated in Figure 15.

Treatment and Course: On January 10, Dr. Dowman removed the entire frontal bone from the supraorbital ridges posterior to the coronal suture (Fig. 16). Three weeks later x-ray studies showed an extension of the disease in every direction except anteriorly and a second operation was carried out.

Before normal healthy bone was encountered the entire vault of the calvarium had been sacrificed (Fig. 17). On February 27, skin grafts were necessary to bridge the scalp defect across the vault. On March 23, the wound had completely healed and the patient was discharged from the hospital. A protective aluminum helmet was fitted to the inside of his hat before dismissal. There have been no subsequent discomforts or evidence of bone disease.

The surgical efforts that are sometimes necessary before skull infection is completely eradicated are well illustrated in this case. This is the greatest sacrifice of bone that has been carried out in any of the cases in this report. Once surgical efforts are begun it

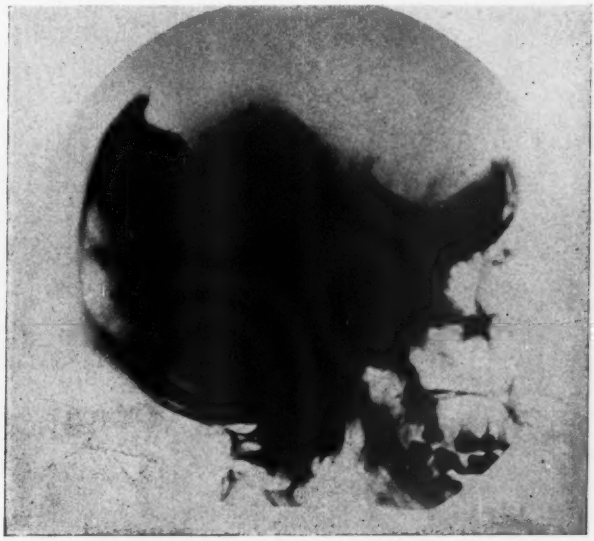

Fig. 17. Case 9. Illustrating the radical efforts that were necessary before complete eradication of the infected bone.

is far wiser to remove a bit more of the healthy appearing bone than to err with conservative efforts. To leave a small area of diseased bone means further invasion of the skull and an interference with secondary healing. The amount of bone that is necessary to be removed is governed somewhat by the roentgenologic findings, in that these plates give the operator some preliminary idea of how extensive the operation will be. The actual amount of bone sacrificed will depend on the gross disease encountered after the scalp reflection. In every direction all questionably diseased bone must be sacrificed. This determination is not always possible from a view of the outer skull table for many times frank pus can be demonstrated in the small rongeured bony fragments, as lying between the two tables of the bone. If the osteomyelitis is of long duration

dural granulations or low grade inflammatory changes are usually demonstrable. When such dural changes are present the skull sacrifice should extend beyond these pathologic areas. These dural findings, however, are no index of the extent of the skull disease and even though healthy dura be exposed beneath the entire rim of the bone defect there may be and usually is frankly diseased skull for a variable distance away. For instance the dural reaction may be limited to an area of 2 to 3 cm. while the skull sacrificed may be for an area several inches in diameter before normal skull is encountered. The gross changes such as small areas of complete bone destruction, granulation tissues, and isolated plugs of purulent material are easily recognizable. The removal of these products down to the dura is not difficult to carry out, nor is the reddened invaded skull about these older portions of the disease going to escape the surgeon's eye but the importance of recognizing the zone between disease and normal skull might escape inspection and demands emphasis. This part of the bone is whitened and in the true sense of the word is dead. Rongeuring is accomplished here with less effort than in normal bone. It is relatively avascular and it is in these bony fragments that an active infectious process is taking place. When normal bone is encountered it will be found to be a pinkish pearly color and it bleeds freely. Only when such bone is encountered in all directions is one justified in feeling that a real attempt at eradicating the disease has been made. This is irrelevant to the amount of bone sacrificed as has been illustrated in the cases in which treatment was radical.

The statement that best treatment is radical excision of all diseased bone is sufficient but a more detailed description of the actual procedure may be helpful to those interested. There are a few instances where drainage has already been superficially instituted. In some cases this drainage is so profuse and where there is no extremely rapid extension, treatment with Carrel-Dakin solution for a few days has helped in lessening the drainage, permitting a little cleaner surgical field. As in Wilensky's[5] experience Dakinization had played no apparent role in delaying the disease but in a few instances may be an adjunct in the preoperative preparation. Once the patient is ready for operation the entire scalp is shaved on the morning of the operation. The operative field is prepared as carefully as for any craniotomy and the scalp incision is made with two considerations; first, the blood supply of soft tissues, and secondly, the cosmetic end results. The operator must depend a bit upon the roentgenologic findings as a lead for exposure, but after the scalp incision and bony exposure, the knowledge of gross pathology will be his guide. Trephining may be necessary but most often

sufficient sequestra formation has taken place to make this unnecessary. Once beneath the inner skull table one must proceed with extreme caution guarding always against a tear in the dura. This may be accomplished in one of several ways: by cotton pledget dissection, by means of a smooth-edged periosteal dissector or the use of small gauze packs. With any method it is wise as an extra precaution to keep the dura retracted downward with a small brain spoon with each maneuver of the bone rongeurs. When normal healthy bone has been encountered in every direction the bleeding

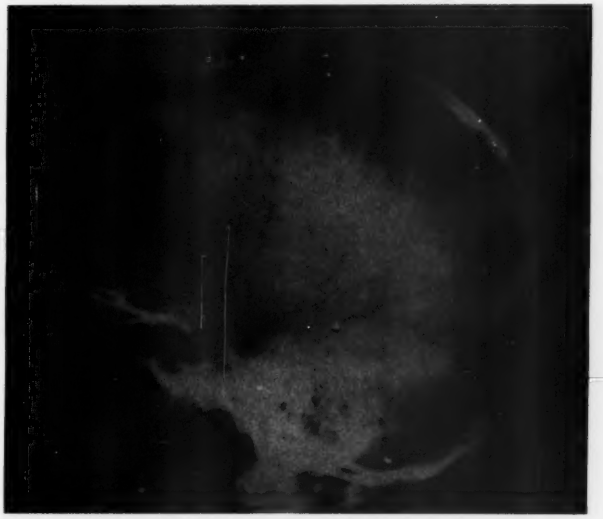

Fig. 18. A case of skull invasion by an occipital meningioma. Compared with Figure 10 it illustrates the problem that sometimes confronts the roentgenologist.

may best be controlled with cotton packs rather than with bone wax, which entails the risk of sealing in infection. After all the diseased bone has been sacrificed the healthy bone edges should be left as smooth and regular as possible. The wound is then irrigated thoroughly with some antiseptic solution. For this purpose Adson recommends tincture of iodine profusely. Removing the cotton pledgets that were used for temporary hemostasis, washed iodoform gauze is then packed firmly against the exposed bone edges, after which the skull defect is filled in with the same gauze strip. This packing should not be sufficient to cause any frank intracranial tension. After the packing, the scalp is closed with through and through interrupted sutures. The iodoform pack is loosened within 24 hours and partially removed at the end of the second 24 hours. After the

end of the third or fourth day, depending on the tendency of the scalp to ooze, all of the stitches are taken out and the remainder of the iodoform pack is removed. Daily dressings of sterile vaseline gauze are then used. The wound should be packed with this vaseline gauze not so firmly as to prevent drainage but sufficiently to allow the wound to be filled in with granulations from below. Approximately 30 days will be the average period before complete secondary healing takes place.

In conclusion, cases of osteomyelitis of the skull of variable etiologic origin have been given. There are a few instances in which the extensiveness of the disease and the associated debilitating effects on the patient prohibited radical surgical efforts. The complications and sequelae of the disease are all so dangerous that early recognition is the answer for prevention and radical surgical removal of all infected skull is the choice of treatment.

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VOLUME VI FEBRUARY, 1937 NUMBER 1

VOLUME VI

The fifth volume of THE SOUTHERN SURGEON has been completed and, frankly, the Editors are proud of it. It consisted of 486 pages and in these pages were 3 papers read before the 1935 Assembly of The Southeastern Surgical Congress, 22 papers read before the 1936 Assembly, and 17 that had not been presented before the Congress, as well as 4 editorials on scientific subjects. Or, from another angle, including this issue, 28 of the papers read before the last Assembly in New Orleans have been printed and 4 could not be secured for publication.

Twenty States were represented in the 1936 volume of the SURGEON. Among these were all the nine component States of the Congress. Kentucky leads the list with 7 papers, North Carolina ranks second with 5, Louisiana third with 4; Georgia, South Carolina, Tennessee, Minnesota and New York tie for fourth place with 3 papers each. Alabama contributed 2, and there was one from Massachusetts, Pennsylvania, Maryland, Virginia, Florida, Texas, Missouri, Illinois and Washington, as well as the District of Columbia.

The most encouraging thing about the growth and progress of this journal is that enough good original contributions are already on hand to run for two issues before we draw on the papers for the 1937 Assembly. The program for this Louisville meeting, which appears in the front of this issue, equals the best surgical program that has ever been offered by this Congress or, we believe, by any other organization: it is sufficient guarantee of the excellence of this journal for the next year.

ON TO LOUISVILLE!

The members of the Southeastern Surgical Congress and their friends have a pleasant and important engagement in Louisville, Kentucky, during the 8th, 9th and 10th of March. These will be red letter days for our Congress—days you cannot afford to miss, days full of educational value and social comradeship. We owe it to ourselves, to our patients, to our profession and to our Congress, to attend every session of this 1937 meeting at Louisville.

The Southeastern Surgical Congress is only eight years old. Our growth has been rapid because our members appreciate the advantages of being connected with high-grade medical associations.

Our 1937 meeting promises to be one of the most interesting of all our meetings thus far. The program will be filled with splendid special papers by those who are leaders of our profession. Other appropriate items of importance and entertainment will be in evidence.

Let us keep abreast of the times; let us keep informed regarding the progress that surgery is making today; let us keep in fellowship with comrades and colleagues; in short, let us be in Louisville when the roll is called and remain, if possible, until the close of the last session.

Many serious problems confront our profession today. New legislation is in the offing. Now is the time to speak or we shall be obliged to hold our peace.

Robert Louis Stevenson was right when he said:

> There are men and classes of men that stand above the common herd; the soldier, the sailor, and the shepherd not infrequently; the artist rarely; rarelier still, the clergyman; the physician, almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only remembered to be marveled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited in the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Herculean cheerfulness and courage. So it is that he brings air and cheer into the sickroom and often enough though not so often as he wishes, brings healing.

I believe you will agree, my friends, that these splendid words fully apply to our faithful surgeons and doctors of these and other days.

This present century is perhaps the most remarkable in the world's history, both in the accomplishments of the past few years and in the promise of the coming days. The discovery of any great principle available in the work of the world does not surprise any thinker.

Medicine and Surgery have not taken a second place in the great discoveries. While they have not been exploited as some others, they have revolutionized our procedure, so much so that the older practitioners have found it necessary to read much and to study hard and often in order to keep in stride with these modern developments.

What of our future? Scientific prophecies are notoriously dangerous. Benjamin Brodie, you remember, was announcing that men would never find a satisfactory agent for surgical anesthesia at the very moment that the ship with news of ether was on the way to England. Samuel Gross said that surgery had reached the limit of its possibilities and he had never removed an appendix. Similar pronouncements have been heard recently from surgeons. They seem to have a way of being pronounced just when a great burst of progress is imminent.

The only safe prediction is that there is no limit to the accomplishments possible. Our task today is to achieve perspective, for we are told, "The young have aspirations that never come to pass and the old have recollections of things that never happened."

So long—Hope to see you at Louisville!

JOHN DARRINGTON, M. D., *President.*

Yazoo City, Mississippi.

BOOK REVIEWS

The Editors of THE SOUTHERN SURGEON *will at all times welcome new books in the field of surgery and will acknowledge their receipt in these pages. The Editors do not, however, agree to review all books that have been submitted without solicitation.*

MODERN UROLOGY IN ORIGINAL CONTRIBUTIONS BY AMERICAN AUTHORS. Edited by HUGH CABOT, M. D., LL. D., C. M. G., F. A. C. S., Professor of Surgery, The Mayo Foundation, Graduate School of the University of Minnesota, and Consulting Surgeon to the Mayo Clinic, Rochester, Minnesota; Formerly Dean and Professor of Surgery in the Medical School of the University of Michigan, Ann Arbor. In Two Volumes, 1,813 pages, with 920 engravings and 21 plates. Third Edition. Price, $20. Philadelphia: Lea & Febriger, 1936.

Late in the nineteenth century a new specialty was founded, genito-urinary surgery with which was generally combined the practice of syphilology. In 1916 the first edition of Cabot's Urology appeared, adding dignity to the new specialty. A second edition followed in eight years. The advances in knowledge, technic and experience have necessitated this new edition, the third.

Braasch writes a concise chapter on methods of diagnosis; Corbus, with equal conciseness, one on syphilis of the genito-urinary system and outlines the accepted treatment of today. He includes other genital ulcers. The section on anatomy, congenital malformations and neoplasms of the penis is by Cecil. Pelouze presents an admirable exposition of gonorrhea, a disease that is still treated at times by most of us and sometimes not too well. In the chapter by George Gilbert Smith on the anatomy, physiology and malformations of the testicle are reproduced three pictures which have appeared in these pages. Hinman gives an excellent description of tumors of the testicle. Hugh Young has prepared a monograph of more than 200 pages on the prostate written with his usual clarity and forcefulness. This monograph is interrupted by Squier on suprapubic prostatectomy and Bumpus on transurethral resection.

The second volume takes up the bladder and upper urinary tract. Dr. Cabot himself discusses stone in the bladder as well as foreign bodies and infections of the kidney. Keys takes up tumors of the bladder in detail. Allen, Lower, Hagner, Hager, Randall, Campbell, Habein, Belt, Scholl, MacKenzie and Caulk take up other phases. Barringer discusses radiation therapy.

It has been impossible so far for the reviewer to read carefully the whole work but he is impressed with the excellence of all that he has read and he is impressed too with the frequency with which Dr. Cabot himself has put in editorial notes, sometimes disagreeing with the author of that section. Urology is not a closed subject and some disagreement is a healthy sign as to the virility of the specialty. It is needless to comment on the preeminence of the various contributors but one can express admiration for the care with which their work has been done, the care with which it has been edited and the abundance of superb illustrations.

In our opinion this book makes all previous volumes in this field out of date.

ABORTION, SPONTANEOUS AND INDUCED: MEDICAL AND SOCIAL ASPECTS. By FREDERICK J. TAUSSIG, M. D., F. A. C. S., Professor of Clinical Obstetrics and Clinical Gynecology, Washington School of Medicine, St. Louis. 536 pages with 146 illustrations. Price, $5. St. Louis: The C. V. Mosby Company, 1936.

Already recognized as a classic, or rather as the classic in this field, Dr. Taussig's book on abortion is acclaimed by the SURGEON with enthusiasm.

He devotes some space to the definition and history of abortion, discusses

abortion in animals, devotes chapters to the anatomy and physiology of early pregnancy, to the pathology of abortion, the mechanics, the symptoms and signs of abortion, the diagnosis and differential diagnosis, and the treatment. He then goes into criminal abortions; his figures as to incidence are appalling.

He devotes excellent chapters to the indications for therapeutic abortion. He finds but very few indications so far as the unborn child itself is concerned, but he emphasizes that when the chances of the baby's being defective are great, the operation should be done, usually accompanied by sterilization.

He takes up in some detail the question of interrupting pregnancy when the family is poor and the woman already has a number of children. He intimates that occasionally in an individual case this may be justified inasmuch as a child brought up in such surroundings hardly has a fair chance. On the other hand, to avoid such problems and also to reduce the number of criminal abortions, he is an enthusiastic advocate of widespread dissemination of adequate knowledge as to birth control.

Several chapters are devoted to the legalization of the operation in Soviet Russia. Legalized abortion has never been so common there as the reviewer had supposed. This is not done for primiparas and gradually restrictions have become more rigid. He finds that even done under such conditions the late sequelae are considerable and unfortunate.

He concludes with a discussion of the legal aspects of abortion with a summary of the laws of each state and his own proposal as to the ideal law.

Every physician will be both interested and benefited by reading this book.

EUGENICAL STERILIZATION, A REORIENTATION OF THE PROBLEM. By The Committee of the American Neurological Association for the Investigation of Eugenical Sterilization: ABRAHAM MYERSON, M. D., JAMES B. AYER, M. D., TRACY J. PUTNAM, M. D., CLYDE E. KEELER, SC.D., and LEO ALEXANDER, M. D. 211 pages. Price, $3. New York: The Macmillan Company, 1936.

Many physicians in recent years, moved by a great deal of sensational literature as to the increasing number of incompetents and mental defectives, have felt it incumbent upon them to foster the passage of laws for eugenic sterilization. Such promotion has perhaps not been quite so fashionable since the unfavorable publicity given the Nazi laws on the subject. The enthusiasm for such laws these authors assert is founded "more upon a desire to elevate the human race than upon proven facts." It behooves us as men of science not to advocate a law because it happens to be the fashion but to study the subject sufficiently to be justified in an opinion.

This book outlines the laws having to do with sterilization both in the different States in this country and abroad. To our astonishment, it commends the present laws in Germany in regard to compulsory sterilization, though it may be that the impartiality with which these laws are executed is open to doubt.

It emphasizes at considerable length that "our knowledge of human genetics has not the precision nor the amplitude which would warrant the sterilization of people who themselves are normal in order to prevent the appearance in their descendants of certain abnormalities." Particularly do they emphasize that there is at present no sound scientific basis for sterilization on account of immorality or character defect: sterilization as punishment is of course unconstitutionally "cruel and unusual." They do advocate sterilization for Hunting-

ton's chorea, hereditary optic nerve atrophy, Friedreich's ataxia, and certain other disabling degenerative diseases recognized as being hereditary. (They are in agreement with Taussig in these indications.)

While they point out that few of the laws having to do with compulsory sterilization are being carried out at this time, they feel that sterilization should always be on a voluntary and regulatory basis until we know more about the subjects involved.

The Committee denies that there is great increase in the mentally incompetent, or that providing care for them without sterilization increases their number. "It is precisely in those communities where social care is good that we find the evidence of the finest culture and, on the whole, the best biology. It is in those communities where social care is poor that the population presents an appalling spectacle of degradation."

THE MANAGEMENT OF FRACTURES, DISLOCATIONS, AND SPRAINS. By JOHN ALBERT KEY, B. S., M. D., Clinical Professor of Orthopedic Surgery, Washington University School of Medicine; Associate Surgeon, Barnes, Children's, and Jewish Hospitals, St. Louis; and H. EARLE CONWELL, M. D., F. A. C. S., Orthopedic Surgeon for the Tennessee Coal, Iron and Railroad Company, Birmingham, Alabama; Orthopedic Chief of the Traumatic and Orthopedic Services of the Employees' Hospital, Fairfield, Alabama; Member of the Fracture Committee of the American College of Surgeons, and the Advisory Editorial Staff of the Journal of Bone and Joint Surgery. 1,164 pages, with 1,165 illustrations. Price, $15. St. Louis: The C. V. Mosby Company.

Of course science, medical science above all, is not provincial and yet it gives us peculiar pleasure on picking up this fine book to find that it is thoroughly southern.

The book was written to furnish a practical working guide in the management of fractures, dislocations and sprains for the student, the general practitioner and the surgeon. In this day of good roads and high-powered automobiles, the doctor in even the smallest town may suddenly be called to the aid of a patient suffering with a severe fracture. He will be able to handle the emergency with greater confidence if he possesses this book. In order to safeguard himself and to give his patient the best possible care, he should also know when to procure the opinion and aid of the specialist.

Since the treatment of so many injuries of this type is influenced by the Workmen's Compensation Laws, a chapter on this subject is included. Since the possibility of damage suits is a constant cause of apprehension to men who treat fractures, the authors also give a good chapter on their medicolegal aspects.

The late Dr. Charles E. Dowman, who contributed a paper on fracture of the skull to the first issue of THE SOUTHERN SURGEON, is represented by a posthumous paper on the same subject which is a classic that will not rapidly become out of date.

We particularly would commend the illustrations in this book, both for their number (they run more than one to the page) and their excellence.

TISSUE IMMUNITY. By R. L. KAHN, M. S., D. Sc., University of Michigan, Ann Arbor. 707 pages. Price, $7.50. Springfield and Baltimore: Charles C Thomas, 1936.

Dr. Kahn, who is best known to the profession at large for his widely used precipitation test for the diagnosis of syphilis, has just published this thoughtful book on immunology which represents the fruit of work of several years. The book is stimulating and a most valuable contribution to immunology in particular, and to medicine in general.

THE LUNG. By WILLIAM SNOW MILLER, M. D., Sc. D., Emeritus Professor of Anatomy, University of Wisconsin. 212 pages, 152 illustrations, 20 in colors. Price, $7.50. Springfield and Baltimore: Charles C Thomas, 1936.

Now that lobes of the lung and even whole lungs are being resected, new light on the structure of the lungs is of real interest to surgeons.

This book is the crowning achievement of Dr. Millers career: it sums up forty-seven years of research in this field. It includes too of course an historical survey as well as a critical survey of more recent investigations. Certainly in no other one publication can one find such a complete and authoritative description of the lung. One must admire too the enthusiasm with which the author writes, and the enthusiasm with which he contemplates further research.

Dr. Miller believes in teaching through the eye. Because of this, the peculiar excellence of this book lies in its illustrations. The exquisite care with which reconstructions have been made and with which the photomicrographs have been selected cannot be overpraised. The superlative pains and generosity that Mr. Thomas has exercised in reproducing them must also be commended.

No reference library at least can any longer be considered adequate without this volume.

THE INTELLECTUAL FUNCTION OF THE FRONTAL LOBES, A STUDY BASED UPON OBSERVATION OF A MAN AFTER PARTIAL BILATERAL LOBECTOMY. By RICHARD M. BRICKNER, B. S., M. D., Assistant Professor of Neurology, College of Physicians and Surgeons; Attending Neurologist, Neurological Institute, New York. 354 pages. Price, $3.50. New York: The Macmillan Company, 1936.

This book presents a detailed study over a period of some months of a man whose frontal lobes were for the most part removed on account of a tumor. There is correlation of his attitude and behavior before and after the operation. There is of course too a review of the literature on the function of the frontal lobes, including the experimental. The general medical reader should find the book entertaining and absorbing, but those whose interests, whether diagnostic or surgical, are more particularly in the brain, will be well repaid by careful study.

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